HKT

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

Response to Consultation Paper

31 October 2024

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 19 September 2024 regarding *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**").

2. This Consultation Paper deals with the re-assignment arrangements for 50 MHz of spectrum in the frequency range 2515 – 2540 MHz paired with 2635 – 2660 MHz ("**Available Spectrum**") when the current assignment period expires in May 2028. However, when deciding on the re-assignment arrangements for the Available Spectrum, consideration should be given to the frequency blocks located directly adjacent to either side of the Available Spectrum, that is, spectrum in the frequency range 2500 – 2515 MHz paired with 2620 – 2635 MHz and 2540 – 2570 MHz paired with 2660 – 2690 MHz ("**Remaining Spectrum**"), whose assignment period expires in March 2039, in order to ensure consistency of treatment of the entire 2.5/2.6 GHz band, i.e. 2500 – 2570 MHz paired with 2620 – 2690 MHz.

3. The Available Spectrum has been assigned to four mobile operators, namely Genius Brand Limited ("**GBL**"), SmarTone Mobile Communications Limited ("**SMT**"), China Mobile Hong Kong Company Limited ("**CMHK**") and HKT to provide 4G services.[1] The location of the Available Spectrum and the Remaining Spectrum within the 2.5/2.6 GHz band is shown in the following diagram:

[1] Note that, except for HKT (who acquired the current block as a result of taking over the original spectrum assignee, CSL Limited), this refers to the mobile operators to whom the Available Spectrum has originally been assigned via auction in March 2013 and hence does not reflect the frequency swap and transfer exercise that has subsequently taken place involving CMHK, GBL, HKT and Hutchison Telephone Company Limited ("**HTCL**").

	Remaining Spectrum Expires March 2039			Available Spectrum Expires May 2028					Remaining Spectrum Expires March 2039						
Lower	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2560	2565	2570
Upper	2620	2625	2630	2635	2640	2645	2650	2655	2660	2665	2670	2675	2680	2685	2690
				GBL	SMT	SMT	CMHK	HKT							

Figure 1: Current spectrum holdings in the 2.5/2.6 GHz band

4. In the following sections of this submission, HKT provides its comments in response to each of the specific questions contained in the Consultation Paper.

PROPOSED RE-ASSIGNMENT APPROACH

5. The CA considers there to be competing demand for the Available Spectrum on the basis that it has been specified by 3GPP as one of the frequency bands that can be used for the deployment of 5G services. In addition, there has been keen demand for the Remaining Spectrum in the previous spectrum auctions, reflecting the suitability of the 2.5/2.6 GHz band for the deployment of 5G services compared to high-band spectrum (above 7 GHz) and low-band spectrum (below 1 GHz) in terms of both coverage and capacity

6. On this basis, in accordance with the Radio Spectrum Policy Framework promulgated by the Government in 2007, a market-based approach is to be used for re-assignment of the Available Spectrum unless there are overriding public policy reasons to depart from such an approach.

Re-Assignment of Spectrum by Auction

7. The CA has considered four policy objectives when deciding whether or not there are any overriding public policy reasons which justify departure from a market-based approach to re-assign the Available Spectrum:

(i) *Ensuring Customer Service Continuity*

The CA considers that customer service continuity is not affected by re-assignment of the Available Spectrum given that the total amount of spectrum to be re-assigned (50 MHz) is not significant.[2] Hence, if any of the incumbent spectrum assignees fails to re-acquire their current spectrum holding to maintain provision of their existing 4G services, they can still use the spectrum they hold in the Remaining Spectrum as well as other frequency bands to ensure service continuity.

[2] The spectrum only accounts for 2% to 8% of the total amount of sub-7 GHz spectrum held by each of the incumbent spectrum assignees.

(ii) *Efficient Spectrum Utilisation*

Re-assignment of spectrum via a market-based approach places the spectrum in the hands of those mobile operators that value it most. It also allows incumbent spectrum assignees to adjust their spectrum holdings, taking into account other mid-band spectrum which they currently hold.

(iii) *Promotion of Effective Competition*

Re-assigning spectrum using a market-based approach would encourage mobile operators to value their newly acquired frequency blocks and make good use of their spectrum to improve their mobile services, thereby promoting further competition to the ultimate benefit of consumers.

(iv) *Encouragement of Investment and Promotion of Innovative Services*

This spectrum re-assignment exercise provides an opportunity for mobile operators to acquire new spectrum blocks. This is likely to require new investment in network infrastructure to enable the frequency bands to be used effectively. Service innovation is expected to result from operators acquiring the right mix of spectrum from the spectrum re-assignment exercise.

8. Given the foregoing analysis, the CA suggests that it is not necessary to depart from the market-based approach for re-assignment of the spectrum and hence the Available Spectrum should be re-assigned via auction, which is the market-based approach that has been used by the CA in the past, and is consistent with the practices adopted by many overseas administrations.

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

9. As a matter of principle, HKT only considers it appropriate to adopt an auction approach for new releases of spectrum. The re-assignment of spectrum which is in existing use by operators needs to take into account

practical considerations, such as service continuity and the network investment already made by the incumbent spectrum holders, and hence cannot be treated in exactly the same way as spectrum which is being made available for the first time.

10. Ideally, unless an incumbent spectrum assignee has failed to meet its licence conditions, it should be offered a right of first refusal to continue using the spectrum after the assignment term expires. This is the only way to ensure service continuity and that no past network investment goes to waste.

11. That being said, given that the total amount of spectrum being considered for re-assignment in this particular case is not significant (50 MHz) and accounts for a very small percentage of the amount of spectrum held by each of the incumbent spectrum assignees of the Available Spectrum, the impact on service continuity and network investment is likely to be minimal.

12. Accordingly, HKT does not object to the use of an auction to re-assign the Available Spectrum.

PROPOSED RE-ASSIGNMENT ARRANGEMENTS

Band Plan

13. The Available Spectrum is currently being used by the incumbent spectrum assignees for 4G services based on the Frequency Division Duplex ("**FDD**") mode of operation (i.e. in paired frequency blocks) whereas the 2515 – 2675 MHz band is being deployed in the Mainland based on the Time Division Duplex ("**TDD**") mode of operation (i.e. in unpaired frequency blocks).

14. Since the Remaining Spectrum is also being used based on the FDD mode of operation and it would be costly, technically complex and time-consuming to switch over from FDD to TDD, the CA considers it preferable for the FDD mode of operation to continue to be used in the re-assignment of the Available Spectrum. This would at least ensure consistent use of FDD throughout the 2.5/2.6 GHz band.

15. Further, to align with the block size which is being used for the Remaining Spectrum and comply with the minimum allowable channel bandwidth for both FDD-LTE and NR FDD as specified by 3GPP, the CA proposes dividing the Available Spectrum into five paired blocks of 2 x 5 MHz each:

	Remaining Spectrum Expires March 2039			Available Spectrum Expires May 2028					Remaining Spectrum Expires March 2039					
MHz	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5	2x5
				A1	A2	A3	A4	A5						

Figure 2: Proposed band plan

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

16. Given that the Remaining Spectrum deploys the FDD mode of operation and is divided into frequency blocks of 2 x 5 MHz, it would make sense for the same band plan to be adopted for the Available Spectrum, that is, for the FDD mode of operation to be used and the spectrum to be auctioned to be divided into blocks of 2 x 5 MHz.

17. This would ensure consistency of use through the entire 2.5/2.6 GHz band and facilitate mobile operators already holding frequency blocks in the Remaining Spectrum to aggregate these with any blocks they acquire at auction of the Available Spectrum. Combined blocks of larger bandwidth allows the operator to attain higher spectrum efficiency, thereby ensuring optimal use of the spectrum.

18. Aligning the band plan for the Available Spectrum with that of the Remaining Spectrum would also make it easier to change the mode of operation (i.e. from FDD to TDD) for the entire 2.5/2.6 GHz band in one go in the future if it is so decided.

Spectrum Cap

19. After taking into account the existing spectrum holdings of the incumbent mobile operators, the CA proposes setting a cap for each bidder at 2 x 10 MHz (i.e. 20 MHz) out of a total of 2 x 25 MHz (i.e. 50 MHz) being re-assigned. This would permit an incumbent spectrum assignee of the Available Spectrum to re-acquire at least the same amount of spectrum it is currently holding.

20. The CA regards such a cap as necessary and justified to prevent an undue concentration of spectrum in the hands of a single mobile operator and hence avoid giving rise to any competition concerns.

Question 3:	*Do you have any views on the proposed spectrum cap of 2 x 10 MHz to be imposed on each bidder for the re-assignment of the Available Spectrum?*

21. Firstly, as a matter of principle, HKT is not in favour of imposing spectrum caps unless there is a need to address a clearly identified competition concern. Restricting the amount of spectrum that can be acquired by a single operator may prevent that operator from: (i) serving its customers with sufficient spectrum to provide a good customer experience; and (ii) achieving economies of scale in using the spectrum with its equipment. In particular, spectrum caps may penalize operators with a larger subscriber base.

22. In paragraphs 21 and 22 of the Consultation Paper, the CA states that with a cap of 2 x 10 MHz (i.e. 20 MHz) in place, the maximum amount of spectrum which an operator would be able to acquire would be limited to 40% of the Available Spectrum (i.e. 40% of the total 50 MHz). As a result, the CA explains, no competition concerns should arise since each of the major mobile operators has already been assigned hundreds of MHz of spectrum across various sub-7 GHz frequency bands.

23. In particular, the CA suggests that even if the operator who currently holds the largest amount of spectrum (i.e. CMHK) were to acquire the maximum permitted 20 MHz of spectrum from the Available Spectrum, that operator's share of the total assigned sub-7 GHz spectrum would only increase slightly from 28.7% to 29.6%, hence this would be unlikely to risk any adverse impact on effective competition in the mobile telecommunications market, especially since the CA intends to release more spectrum in different frequency bands in the future.

24. However, the CA has not explained why it is necessary to impose any spectrum cap at all. There is no analysis or consideration of whether anti-competitive effects would result even if the operator who currently holds the largest amount of spectrum were permitted to, and subsequently acquires, the majority (if not all) of the Available Spectrum. Specifically, the CA has not made it clear if it has conducted an evaluation to determine (based on a rigorous analysis of the market) what level of spectrum holding needs to be attained by a single operator before there can be said to be competition concerns and what these competition concerns might be. It is difficult to see how any spectrum caps can be justified without conducting such an analysis.

25. Secondly, there is no automatic correlation between the amount of spectrum held by an operator and the state of competition in the mobile services market. The CA assumes, without any explanation or analysis, that a significant spectrum holding in the hands of an individual market player will automatically lead to an adverse impact on effective competition in the mobile services market. However, spectrum is only one of the inputs enabling an operator to provide mobile services and it cannot be considered in isolation. Other factors need to be taken into account, including the cost of spectrum and the different amounts of

spectrum required by different operators depending on the size of their subscriber base.

26. Technically speaking, an operator who does not possess sufficient spectrum to meet its required capacity to supply mobile services can, to a certain extent, compensate for this by installing more cell sites. On the other hand, acquiring large stocks of spectrum costs money, comes with commitments attached, e.g. roll out obligations and does not guarantee an increase in the number of subscribers for an operator. The operator still needs to attract customers to subscribe to its services.

27. Logically, the greater the number of customers sitting on an operator's network, the more spectrum that operator needs to continue providing its mobile services or offer new services to its customers. An operator with a large customer base should not be unduly restricted by the amount of spectrum it can acquire, particularly if it can demonstrate a high customer-to-spectrum ratio as compared with other operators holding lower amounts of spectrum.

28. In this case, given: (i) the lack of evidence of any clearly identified competition concerns; (ii) that the total amount of spectrum being considered for re-assignment is not significant; (iii) that each of the major mobile operators have already been assigned hundreds of MHz of spectrum across various sub-7 GHz frequency bands; and (iv) based on the CA's stated aim to impose minimal constraints upon spectrum acquisition in an auction[3], HKT is of the view that no spectrum cap should be imposed.

29. If the CA does nevertheless decide to set a spectrum cap, it is unreasonable for the same cap to apply to all mobile operators regardless of the number of customers served by the operator using its holding of spectrum, as this would unfairly discriminate against larger players who need more spectrum to support their larger customer base.

30. Spectrum caps, if they are to be used, should only be imposed after the CA has evaluated each operator's customer-to-spectrum ratio (to determine whether an operator is using its spectrum effectively) and then

[3] Refer to paragraph 21 of the Consultation Paper.

also take into account the relative market share (based on number of customers) of each mobile operator.

31. If, despite the above, the CA still decides to proceed with its proposed spectrum cap of 20 MHz per bidder, HKT considers that this limit should be applied to the total *effective* amount of spectrum acquired by each bidder. In other words, an operator should be permitted to acquire spectrum directly and, in addition, through any associated parties as long as the resulting total spectrum *accessible* by the operator amounts to 20 MHz or less.[4]

32. In this regard, HKT considers it appropriate to allow "connected" bidders to participate in the spectrum auction alongside each other as long as the spectrum cap is not circumvented. If the purpose of prohibiting "connected" bidders from participating in the same auction is to prevent any spectrum caps from being bypassed, then HKT's proposal of applying the spectrum caps to total effective amount of spectrum acquired would address this concern.

33. For the Available Spectrum, in particular, the CA should permit both GBL and HKT, as the incumbent spectrum assignees, to participate in the auction so that they are given the opportunity to regain their current respective spectrum holdings as envisaged in paragraph 22 of the Consultation Paper:

> *[…] 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.*

[4] For instance, in the case of GBL and HKT participating in the spectrum auction, if GBL acquires 20 MHz, HKT should be permitted to acquire 10 MHz on its own because HKT's effective holding is (50% x 20 MHz acquired by GBL) + 10 MHz = 20 MHz. On the same basis, HTCL should also be permitted to participate in the same auction and acquire 10 MHz as its effective holding would then also become (50% x 20 MHz acquired by GBL) + 10 MHz = 20 MHz, which is within the spectrum cap. This would be the same result as HKT and HTCL participating in the auction individually (without GBL) and each successfully bidding for 20 MHz each.

34. In fact, preventing GBL and HKT from participating in the auction together is tantamount to the CA requiring GBL to be divested between HKT and HTCL (on a 50:50 basis) before HKT can be permitted to take part in the auction. This is clearly unreasonable.

35. Finally, it is pertinent to note that the CA had, on a previous occasion, decided it unnecessary to impose a spectrum cap on bidders even when the total amount of spectrum available represented 9% of the existing pool of assigned spectrum for mobile services.[5] In this present case, since the amount of spectrum available merely amounts to around 4.5% of the total sub-7 GHz spectrum already assigned to mobile operators[6], there should be even less of a need to set a spectrum cap.

Eligible Bidders

36. As in past spectrum auctions, the CA proposes to impose minimal requirements on interested bidders in order to qualify for participation in the auction, namely the lodging of a deposit and the ability to demonstrate technical and financial capability to provide service in accordance with the licence to be issued in respect of the spectrum.

37. All interested parties, including the incumbent spectrum assignees of the Available Spectrum, would be permitted to apply for participation in the auction, subject to fulfilment of the above qualification requirements and the connected bidder restriction.

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, subject to the minimum qualification requirements and the connected bidder restriction?*

[5] Refer to paragraph 33 of the CA's Statement on *Assignment of the Available Radio Spectrum in the 2.5/2.6 GHz Band for Wireless Broadband Services* issued on 4 July 2012.

[6] 50 MHz/1113.4 MHz (per the total shown in Table 2 of the Consultation Paper) = 4.5%.

38. Given the limited amount of spectrum that is being offered (50 MHz) and the fact that a newcomer with: (i) no existing holding of spectrum; (ii) no existing network or cell sites; and (iii) no operational experience is unlikely to be able to provide a competitive mobile service that would be sustainable using the spectrum and that would meet the licence requirements, HKT would suggest it more practical to restrict eligible bidders to the existing mobile operators.

39. This would ensure that the Available Spectrum is being put to the best use and would avoid a recurrence of the problems which arose in the past when a new entrant acquired spectrum in the 2.3 GHz band and subsequently failed to make use of its assigned frequency blocks to provide a mobile service.

Auction Format

40. The CA proposes to use a Simultaneous Multiple Round Ascending ("**SMRA**") format auction to assign the spectrum on the basis that this type of auction was mostly used in auctions conducted in the past and is a type of auction with which the industry is familiar. The SMRA format was, in fact, used for the spectrum auction held in October 2021 to assign the frequency blocks in the Remaining Spectrum.

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

41. In view of the small number of frequency blocks involved and the mobile operators' familiarity with this auction format, HKT considers it appropriate to adopt an SMRA auction format to determine re-assignment of the Available Spectrum.

LICENSING ARRANGEMENTS

Licensing and Validity Period

Alignment of the Expiry Date of the Existing Assignments of the Available Spectrum

42. The 15 year assignment period for the Available Spectrum currently assigned to GBL, SMT, CMHK and HKT expires in May 2028 (see Figure 1). However, while the frequency blocks assigned to GBL, SMT and CMHK expire on 31 May 2028, that for HKT (i.e. frequency block A5 per Figure 2) expires 11 days earlier on 20 May 2028.

43. In order to align the expiry dates for all of the frequency blocks so as to facilitate a smooth handover to the prospective spectrum assignees in the new term, the CA suggests that the existing assignment term for the frequency block pertaining to HKT be administratively extended from 20 May 2028 to 31 May 2028 (i.e. by 11 days), subject to payment of any additional Spectrum Utilisation Fee ("**SUF**") by HKT for this extended period.

44. The SCED proposes that the additional SUF required to be paid by HKT be computed based on a proration of the total lump sum SUF previously paid by HKT (i.e. $310m) for assignment of frequency block A5 for 15 years. The SUF required to be paid by HKT for the additional 11 days of assignment is therefore calculated as follows:

($310,000,000/15 years/365 days) x 11 days = $623,000

Question 6:	*Do you agree with the proposed arrangements for the alignment of the expiry date of the existing assignments of the Available Spectrum and the payment of SUF for the extended period of assignment of the frequency block A5?*

45. HKT supports the proposal to align the expiry dates of all 5 frequency blocks of the Available Spectrum to 31 May 2028 in order to facilitate re-assignment of the spectrum in the new term.

46. HKT also has no objection to the way the additional SUF payable by HKT has been calculated for the 11 days extended assignment period. It is appropriate to base the computation on a pro-ration of the total amount of SUF previously paid by HKT for the 15 year assignment period.

Alignment of the Expiry Date of the New Assignments of the Available Spectrum with that of the Remaining Spectrum

47. The frequency blocks in the Available Spectrum sit between the upper band and the lower band of the Remaining Spectrum (see Figure 1). Once the expiry date of the current assignment period for all five blocks (A1 to A5) in the Available Spectrum are aligned at 31 May 2028, the new term of assignment for the Available Spectrum will be from 1 June 2028 to 31 May 2043, if the standard assignment period of 15 years is adopted.

48. However, given that the current assignment period for the Remaining Spectrum is from 31 March 2024 to 30 March 2039, this will result in continued mis-alignment of the expiry dates for the Available Spectrum and the Remaining Spectrum, thereby resulting in fragmented frequency blocks within the 2.5/2.6 GHz band and restricting the ability of the CA to assign contiguous frequency blocks in the band.

49. In order to resolve this problem, the CA proposes to shorten the assignment period of the Available Spectrum in the new term from 15 years to around 10 years and 10 months so that the expiry date of the assignment period coincides with that of the Remaining Spectrum (i.e. on 30 March 2039).

50. As the assignment term for both the Available Spectrum and Remaining Spectrum will then expire on the same date, this would allow the CA to re-assign a continuous band of 140 MHz of spectrum in one go in the new term. In this way, mobile operators would be afforded the opportunity to acquire larger blocks of contiguous spectrum to enhance spectral efficiency in the band and allow a more holistic review to be conducted of the 2.5/2.6 GHz band regarding the mode of operation (i.e. FDD or TDD).

51. While the CA intends to issue the new spectrum assignees of the Available Spectrum with a standard 15 year Unified Carrier Licence ("**UCL**") with effect from the spectrum assignment date (i.e. from 1 June 2028 to 30 May 2043), the assignment period of the Available Spectrum will expire earlier than the licence expiry date (i.e. on 30 March 2039).

Question 7:	*What are your views on the proposed arrangements to shorten the new assignment term of the Available Spectrum to about ten years and ten months from 1 June 2028 to 30 March 2039?*

52. HKT considers it sensible to deviate from the standard 15 year assignment period for spectrum and shorten the term for the Available Spectrum so as to allow both the Available Spectrum and Remaining Spectrum to expire on the same date, i.e. 30 March 2039. This would allow the whole 2.5/2.6 GHz band to be re-assigned in one single exercise in the future (thereby allowing more contiguous blocks of spectrum to be assigned) and facilitate a change in the mode of operation for the band (i.e. from FDD to TDD) if it is so decided.

53. As for the CA's proposal to issue each successful bidder of the Available Spectrum a new 15 year UCL with effect from 1 June 2028 to 30 May 2043 to cover the assignment period of the spectrum from 1 June 2028 to 30 March 2039, HKT would note that the UCLs currently held by the four major mobile operators, i.e. CMHK, HKT, HTCL and SMT cover the period from 1 August 2024 to 31 July 2039.

54. This means that the licence period of the existing UCLs held by the four major mobile operators already cover the assignment period for the Available Spectrum. Thus, in the event that only the four major mobile operators participate in the auction to re-assign the Available Spectrum, it should not be necessary to issue the successful bidder with a new UCL. Any spectrum acquired from the auction by the mobile operator can simply be added to its existing UCL with effect from the assignment date, i.e. 1 June 2028.

55. While the Spectrum Utilisation Fee pertaining to the frequency blocks acquired by the mobile operator can be charged in the usual

manner, any additional licence fee (i.e. spectrum management fee component of the annual licence fee) which becomes payable as a result of the licensee acquiring spectrum can simply be calculated on a pro rata basis for the first and final years for which the spectrum is assigned to the licensee. This would avoid the administrative inconvenience associated with the process normally adopted for the issue of a new licence each time spectrum is assigned to a licensee:

- Submitting provisional figures to OFCA to enable a provisional licence fee for the new UCL to be computed;
- Payment of the provisional licence fee by the licensee according to the calculation prepared by OFCA based on the figures provided by the licensee and the unexpired portion of the licence fee previously settled by the licensee;
- Certification of the final figures by the licensee's auditor and submission of this report to OFCA;
- Recomputation of the licence fee by OFCA based on the auditor's confirmed figures; and
- Payment by the licensee of any shortfall in the licence fee or receipt of a cheque for any over-payment of the licence fee based on OFCA's recomputation.

Frequency Transfer

56. The Available Spectrum is currently assigned to GBL, SMT, CMHK and HKT. Given that HKT holds a 50% share in GBL (with HTCL holding the other 50%), HKT will not be permitted to participate in the auction of the Available Spectrum along with GBL due to the connected bidder restriction. Under the connected bidder rules, either GBL participates in the auction on its own or HKT and HTCL participate in the auction. This means that HKT or GBL would be prevented from re-acquiring their existing holding of Available Spectrum, which could result in service continuity issues.

57. To resolve this problem, the CA has proposed that HKT and HTCL be permitted to jointly apply for approval to transfer to GBL all or part of the Available Spectrum for which they successfully bid at auction. Further, given that HKT and HTCL have an equal shareholding in GBL and each block in the Available Spectrum is fixed at 2 x 5 MHz (i.e. 10 MHz), the CA will only consider a joint transfer of up to 20 MHz of spectrum by HKT and HTCL into GBL (i.e. HKT and HTCL each contribute a block of 2 x 5 MHz).

Frequency Swap

58. In past spectrum auctions, the CA has forbidden any frequency swapping of the auctioned spectrum in the initial few years following spectrum assignment. However, as stated by the CA in the Joint Statement issued by the CA and the SCED on 30 March 2021 dealing with the re-assignment arrangements for the Remaining Spectrum[7], the CA will consider any proposals to swap frequency blocks once all of the spectrum in the 2.5/2.6 GHz band (i.e. both the Available Spectrum and Remaining Spectrum) have been re-assigned, provided there are sound justifications for doing so.

Technology Neutrality

59. As per (almost all of) the previous spectrum assignments, the CA intends to impose no restrictions on the technology that can be used with the spectrum as long as it is based on widely recognized standards and does not cause any harmful interference to other spectrum assignees of the 2.5/2.6 GHz band. Accordingly, use of the Available Spectrum should be based on the FDD mode of operation as stipulated in the relevant 3GPP standards per the band plan proposed by the CA.

[7] See paragraph 41 of the Joint Statement issued by the CA and SCED on 30 March 2021 regarding *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.*

Network and Service Rollout Obligations

60. Consistent with past spectrum auctions, the CA intends to impose network and service rollout obligations on the successful bidders for the spectrum in order to prevent spectrum hoarding and to ensure timely provision of mobile services to the public.

61. Given that the 2.5/2.6 GHz band has good radio propagation characteristics that facilitate the provision of broad geographical coverage in an economic way, and the existing extensive coverage of networks already using the 2.5/2.6 GHz band, the CA suggests it appropriate to set a network/service rollout obligation whereby spectrum assignees are required to make use of the frequency blocks to provide a minimum coverage of 90% of the population of Hong Kong within 5 years of the spectrum being assigned.

Performance Bond for Rollout Obligations

62. In order to ensure compliance with the network and service rollout obligations described above, the CA intends to require successful bidders of the spectrum to provide a performance bond, the amount of which will be specified when the details of the auction are announced.

63. As other frequency blocks in the 2.5/2.6 GHz band are already in use by the incumbent spectrum assignees of the Available Spectrum, should any of these mobile operators successfully acquire any of the spectrum blocks in the Available Spectrum, the CA is prepared to waive the performance bond in respect of these blocks if the operator is able to provide network coverage figures demonstrating that its existing network operating in the 2.5/2.6 GHz band has already met the proposed 90% minimum population coverage requirement.

Question 8:	*Do you have any views on the proposed licensing arrangements as specified in paragraphs 31 – 38 above?*

64. Paragraphs 31 to 38 of the Consultation Paper describe the CA's proposals in respect of the: (i) frequency transfer; (ii) frequency swap; (iii)

technology neutrality; (iv) network and service rollout obligations; and (v) performance bond for rollout obligations. HKT has the following comments.

Frequency transfer

65. As explained earlier in this submission, HKT considers it feasible to allow "connected" bidders to participate in the spectrum auction alongside each other as long as the spectrum cap is not circumvented. This would then permit GBL and HKT (and even HTCL) to participate in the spectrum auction and directly re-acquire their existing spectrum holdings without resorting to any spectrum transfers from HKT/HTCL to GBL.

66. However, if the CA still considers it justified that connected bidders be barred from participating in the same auction (despite the *effective* amount of spectrum acquired by each bidder being limited to the spectrum cap), then it would be necessary to allow frequency blocks acquired by HKT and HTCL to be transferred into GBL on an equal basis (i.e. a maximum of 2 x 5 MHz each) in order to ensure that GBL can continue operations.

Frequency swap

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

68. HKT therefore welcomes the CA's proposal to consider applications for frequency swapping by the spectrum assignees of the 2.5/2.6 GHz band after the auction of the Available Spectrum has been completed.

Technology neutrality

69. HKT supports a technology neutral approach as long as the technology to be deployed follows a widely recognized standard.

Network and service rollout obligations & performance bond for rollout obligations

70. Generally speaking, given the competitive conditions in the Hong Kong mobile market, operators who have been successfully assigned spectrum would be keen to roll out their network and service as quickly as possible, so there is little incentive for operators to hoard spectrum or delay provisioning service. Accordingly, as a matter of principle, HKT does not consider it necessary to impose network and service rollout obligations or require spectrum assignees to provide a performance bond to guarantee fulfillment of such obligations. The funds could more productively be put towards investment in network rollout.

71. That being said, in the interests of consistency, given that a 90% population coverage within 5 years has already been set for the Remaining Spectrum, then HKT would find it acceptable to adopt the same network and service rollout commitment for the Available Spectrum.

72. Should network and service rollout obligations be imposed and spectrum assignees be required to provide a performance bond to guarantee fulfilment of these commitments, HKT agrees with the CA's proposal to waive the requirement to provide a performance bond if any of the auctioned spectrum is acquired by an incumbent spectrum assignee of the Available Spectrum so long as the spectrum assignee can demonstrate already having met the prescribed network and service rollout requirements.

SPECTRUM UTILISATION FEE

73. While the exact level of the SUF for the Available Spectrum will be determined by auction, the initial reserve price to kick start the bidding is to be set by the SCED. Given that the assignment period for the Available Spectrum will be less than the normal 15 years, the reserve price will be set to reflect this shortened assignment period.

74. As per the spectrum auctions in recent years, the SCED proposes to allow spectrum assignees to pay their SUF either in one lump sum upfront (which is the SUF amount determined at auction) or in annual instalments over 11 years, which is the number of years of assignment rounded up to the nearest year. If the SUF is paid by instalment, the first instalment will be the SUF determined at auction divided by 11, and each subsequent annual instalment will be computed as the previous year's instalment increased by a fixed percentage in order to reflect the time value of money to the Government.

Question 9:	*Do you have any views on the proposal in relation to the setting and collection of SUF as specified in paragraphs 39 – 40 above?*

75. HKT has all along 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.

76. Accordingly, HKT would once again urge the SCED to set a minimal reserve price in respect of the auction of the Available Spectrum. It would be rational for the SCED to set the opening price for the auction at no higher than the reserve price that was used for the auction of the Remaining Spectrum held in October 2021.[8] In fact, given the reduced assignment period for the spectrum (i.e. 11 years instead of 15 years), a

[8] The auction reserve price set for this auction was $50 million per block of 2 x 5 MHz (10 MHz), i.e. $5 million per MHz.

discount should be applied to the reserve price that was used in the October 2021 spectrum auction for the Remaining Spectrum.

77. To further ease the pressure on operators' 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. Nevertheless, in view of the decreasing cost of funds, the SCED could consider reducing the pre-set fixed percentage which is currently being applied to uplift each annual SUF instalment.

Submitted by
Hong Kong Telecommunications (HKT) Limited
31 October 2024