

**Joint Statement of the Communications Authority and
the Secretary for Commerce and Economic Development**

**Arrangements for Assignment of the Spectrum in the
600 MHz and 700 MHz Bands for the Provision of Public Mobile Services
and the Related Spectrum Utilisation Fee**

30 March 2021

PURPOSE

This Statement promulgates the decision of the Communications Authority (“CA”) on the allocation of the 614 – 806 MHz band to mobile service on a primary basis and the associated arrangements for assignment of a total of 140 MHz of spectrum comprising 2 x 35 MHz of spectrum in each of the ranges 617 – 652 MHz paired with 663 – 698 MHz (“600 MHz band”) and 703 – 738 MHz paired with 758 – 793 MHz (“700 MHz band”) (collectively referred to as the “600/700 MHz bands”) for the provision of public mobile services including the fifth generation (“5G”) services. This Statement also announces the decision of the Secretary for Commerce and Economic Development (“SCED”) on the arrangements for the related spectrum utilisation fee (“SUF”).

EXECUTIVE SUMMARY

S1. The CA decides to amend the Hong Kong Table of Frequency Allocations to re-allocate the 614 – 806 MHz band to mobile service.

S2. The CA decides to adopt a market-based approach for assignment of a total of 140 MHz of spectrum comprising 2 x 35 MHz of spectrum in each of the 600/700 MHz bands for the provision of public mobile services.

S3. Analogue television services were switched off (i.e. analogue switch-off (“ASO”)) on 30 November 2020. The spectrum in the 600/700 MHz bands will be made available for the provision of public mobile services after completion of the subsequent migration of digital television channels by 30 November 2021. While the spectrum in the 600 MHz band will be designated for indoor mobile

telecommunications use with a view to avoiding mutual radio interference with usage in the Mainland, the spectrum in the 700 MHz band will be designated for territory-wide deployment of public mobile services.

S4. The spectrum in each of the 600/700 MHz bands will be divided into seven frequency blocks with a bandwidth of 2 x 5 MHz each. A spectrum cap of 30 MHz (i.e. 2 x 15 MHz) will be imposed on each bidder in the auction when bidding for each of the 600/700 MHz bands.

S5. The spectrum in the 600/700 MHz bands will be put to auction together with other available spectrum (namely spectrum in the 850 MHz, 2.5/2.6 GHz and 4.9 GHz bands) under a single auction in the simultaneous multiple-round ascending (“SMRA”) format. The CA targets to conduct the auction in the fourth quarter of 2021, and will provide details of the auction nearer the time.

S6. The spectrum in the 600/700 MHz bands will be assigned around end-2021 for a term of 15 years based on the principle of technology neutrality. Frequency swapping within the first five years of spectrum assignment will generally not be considered.

S7. Within the first five years of spectrum assignment, each successful bidder of the spectrum in the 600 MHz band will be required to establish at least 100 indoor base stations, whilst each successful bidder of the spectrum in the 700 MHz band will be required to provide a minimum coverage of 90% of population. Each successful bidder of spectrum in either or both of the 600/700 MHz bands will also be required to lodge a performance bond as a guarantee of its compliance with the network and service rollout obligations.

S8. The SUF of the spectrum in the 600/700 MHz bands will be determined through auction, subject to auction reserve prices to be specified nearer the time of the auction. In terms of the method of payment, spectrum assignees will be given a choice to pay the SUF either by lump sum payment upfront or by annual instalments, with the first instalment equivalent to the lump sum payment divided by 15 and with subsequent instalments increased every year by 2% to reflect the time value of money to the Government.

INTRODUCTION

Hong Kong entered the era of full digital terrestrial television (“DTT”) broadcast on 1 December 2020, which outperforms analogue television broadcast in terms of audio and picture quality and also enables higher spectral efficiency. Following ASO and completion of the migration of all TV frequency channels from the upper part of the broadcast band (i.e. the 614 – 806 MHz band) to the 470 – 614 MHz band (“Channel Migration”)¹ by 30 November 2021, the spectrum thus vacated in the 600/700 MHz bands can be deployed for the provision of high value-added mobile services such as 5G. Frequency coordination that has been completed with the Mainland authorities ensures that the deployment of spectrum in the frequency bands concerned in Hong Kong and the Mainland (in particular Guangdong Province) post-ASO will not cause mutual radio interference with each other over the boundary². While the Mainland will continue to use the 600 MHz band for broadcasting purposes, Hong Kong can deploy the band for indoor mobile telecommunications use without harmful interference.

2. Against the above background, the CA and SCED jointly issued a consultation paper on 19 August 2020 (“Consultation Paper”)³ to seek views and comments of the industry and other affected persons on the proposal to allocate the 614 – 806 MHz band to mobile service on a primary basis and the proposed arrangements for the assignment of 2 x 35 MHz of spectrum in the 600 MHz band for indoor deployment and 2 x 35 MHz of spectrum in the 700 MHz band for territory-wide deployment, as well as the SUF payable for using the two frequency bands concerned.

¹ While the lower part of the broadcast band in the range of 470 – 614 MHz will continue to be used for supporting broadcasting services, the vacation of spectrum in the 600/700 MHz bands will involve the migration of the Multiple Frequency Network channels currently shared by Television Broadcasts Limited and HK Television Entertainment Company Limited to Single Frequency Network (“SFN”) Channel 37 (598 – 606 MHz), as well as the migration of Radio Television Hong Kong’s SFN Channel 62 (798 – 806 MHz) to SFN Channel 27 (518 – 526 MHz). To avoid interruption to the viewing of DTT services by the general public, simulcasting the DTT signals at both the existing and new TV frequency channels will be implemented between April and November 2021.

² On 1 April 2020, the Ministry of Industry and Information Technology announced the change in allocation of spectrum in the frequency ranges of 703 – 743 MHz paired with 758 – 798 MHz from broadcasting service to mobile service.

³ The Consultation Paper is available at:
https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_1.pdf.

3. Upon the close of the consultation, 10 submissions were received⁴. Having carefully considered the views and comments received, the CA and SCED set out in this Statement their respective decisions on the arrangements for allocation and assignment of the spectrum in the 600/700 MHz bands and the related SUF. Salient views and comments of the respondents, as well as the responses of the CA and SCED, are summarised in **Annex A**.

LEGISLATIVE AND POLICY 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 as required under section 32G(2) of the TO. Sections 32I(2) and 32I(4) of the TO empower SCED to prescribe the level of SUF or the method for determining the SUF.

5. Section 4(4) of the Communications Authority Ordinance (Cap. 616) (“CAO”) stipulates that the CA, in performing its functions, must have regard to 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).

6. The Radio Spectrum Policy Framework (“Spectrum Policy Framework”)⁵ promulgated by the Government in April 2007 sets out the policy objectives and the guiding principles in spectrum management which the CA should

⁴ Submissions to the Consultation Paper are available at:
https://www.coms-auth.hk/en/policies_regulations/consultations/completed/tele_services/index_id_2263.html.

⁵ The Spectrum Policy Framework is available at:
<https://www.cedb.gov.hk/assets/resources/ccib/policies/spectrum.pdf>.

take into account in discharging its spectrum management responsibilities under the TO. By a statement issued in April 2007, the former Telecommunications Authority (“TA”) 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 TO⁶.

7. Pursuant to the Spectrum Policy Framework, 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 for the spectrum from providers of non-Government services, unless there are overriding public policy reasons to do otherwise. The Spectrum Policy Framework also specifies that in case of a spectrum refarming exercise, an appraisal of the impacts of different options, including the option of “do nothing”, will be undertaken by the CA before a decision is taken.

THE CA’S DECISION ON ALLOCATION OF THE 614 – 806 MHz BAND TO MOBILE SERVICE

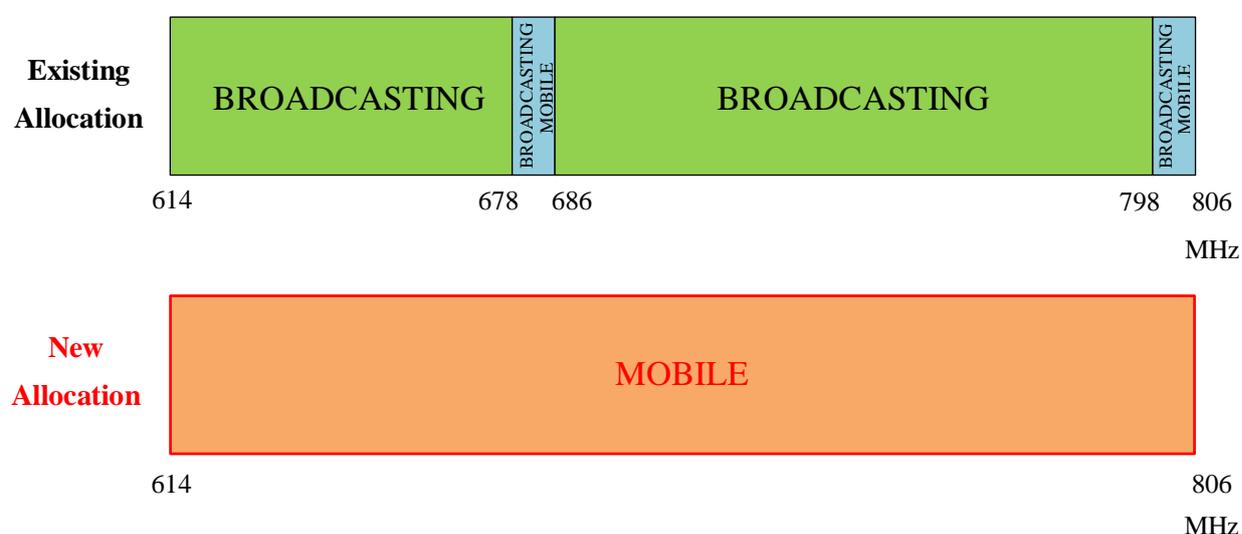
8. In order to enable the use of the 600/700 MHz bands for the provision of public mobile services including 5G services in Hong Kong after completion of Channel Migration to vacate the bands by 30 November 2021, the CA proposed in the Consultation Paper to re-allocate the 614 – 678 MHz and 686 – 798 MHz bands from broadcasting service to mobile service on a primary basis and remove the existing allocation of broadcasting service in the 678 – 686 MHz and 798 – 806 MHz bands. In other words, the entire 614 – 806 MHz band was proposed to be allocated to mobile service only on a primary basis. All respondents to the consultation support the proposed allocation so that the spectrum will be released in a timely manner for the provision of public mobile services.

9. From the angle of spectrum management, there are sound justifications and public interest reasons to vacate the 614 – 806 MHz band after ASO and re-allocate it for mobile service to satisfy market demand and to fully realise the advantages of the digital dividend for the benefits of the Hong Kong community at large. The CA has the statutory duty to promote the efficient allocation and use of

⁶ The TA Statement on the Spectrum Policy Framework is available at: https://www.coms-auth.hk/filemanager/common/policies_regulations/ca_statements/ta20070424_en.pdf.

the radio spectrum as a public resource of Hong Kong. Having regard to the guidance given in the Spectrum Policy Framework, the CA considers that the alternative option of “do nothing” (i.e. leaving the vacated spectrum unused) would not promote the efficient use of spectrum. Coupled with the support received from the public consultation, **the CA decides to amend the Hong Kong Table of Frequency Allocations to re-allocate the entire 614 – 806 MHz band to mobile service**, as depicted in Figure 1 below. The new allocation is in compliance with frequency allocation by the International Telecommunication Union (“ITU”) and in line with the adoption of the bands for 5G in other major economies⁷.

Figure 1: Allocation of the 614 - 806 MHz Band



THE CA’S DECISION ON ARRANGEMENTS FOR ASSIGNMENT OF THE SPECTRUM IN THE 600/700 MHz BANDS

Demand for Spectrum in the 600/700 MHz Bands

10. The CA set out its assessment in the Consultation Paper that there would likely be competing demands for the spectrum in the 600/700 MHz bands, taking into account the scarcity and limited supply of spectrum in the low frequency band suitable

⁷ The 700 MHz band was identified by the World Radiocommunication Conference 2015 of the ITU for the provision of International Mobile Telecommunication services. It has been adopted by major economies in Europe and Asia Pacific regions such as Germany, United Kingdom and Thailand for providing public mobile services. As to the 600 MHz band, it has been assigned for public mobile use in the United States. Other economies such as Canada and Mexico also have identified or are considering to identify the band or parts thereof for the provision of public mobile services.

for wide-area 5G deployment and the expected increase in the supply of 5G equipment and devices operating in the 600/700 MHz bands from 2021 onwards. Respondents generally do not dispute the existence of competing demands for spectrum in the 700 MHz band, and a number of them even urge the CA to release also the 2 x 10 MHz of spectrum (in the range of 738 – 748 MHz paired with 793 – 803 MHz) reserved for Government applications to public mobile use. However, some of the mobile network operators (“MNOs”) doubt the existence of competing demands for the spectrum in the 600 MHz band due to the restriction to indoor use and limited equipment supply for the band, and there are suggestions from respondents to make available the 600 MHz band for deployment in outdoor areas.

11. There is limited supply of spectrum in the low frequency band below 1 GHz⁸ and a high demand for it due to its excellent propagation characteristics, both for commercial applications and Government services. Apart from supplying sufficient spectrum to facilitate the development of the mobile telecommunications market, the CA will also ensure necessary spectrum be reserved for the provision of Government services under the Spectrum Policy Framework. In this regard, for the spectrum in the 614 – 806 MHz band re-allocated for mobile service, the assignment of 140 MHz of spectrum for the provision of commercial uses and the reservation of 20 MHz of spectrum for government uses should be an appropriate and balanced arrangement.

12. As regards the 600 MHz band, which has long range propagation characteristics, the CA considers that it cannot be used in outdoor areas in Hong Kong for mobile services because of the risks of radio interference with the broadcasting services on the Mainland, in particular the Guangdong province. Accordingly, the CA considers that there is a need to restrict the band to indoor use only. The band is, however, considered valuable for deployment in indoor areas to provide the much needed additional network capacity in congested or high traffic indoor hotspots such as confined areas in the Mass Transit Railway system, Hong Kong Conventional and Exhibition Centre, etc. The value which MNOs attribute to such spectrum was demonstrated by the intense competitive bidding observed in the auction conducted for the assignment of 100 MHz of spectrum in the 3.3 GHz band which is also confined to indoor usage. Spectrum in the 600 MHz band is expected to be even more attractive than the 3.3 GHz band in terms of the cost effectiveness in spectrum deployment. The current relatively limited supply of mobile network equipment and

⁸ At present, spectrum in the sub-1 GHz band, at 85 MHz in total, accounts for less than 10% of the total low- and mid-band frequency currently deployed for the provision of public mobile services in Hong Kong.

user devices compatible with the 600 MHz band is likely to be addressed by suppliers in the foreseeable future given that the 600 MHz band is also allocated for mobile use in North America.

13. Having regard to the submissions received and taking into account the above considerations, **the CA maintains its view that there are likely to be competing demands for spectrum in the 600/700 MHz bands when it is released to the market.**

Assignment of Spectrum by Auction

14. In accordance with the guiding principle in the Spectrum Policy Framework for the management of spectrum for which there are likely to be competing demands, the CA proposed in the Consultation Paper to adopt a market-based approach for assignment of the spectrum in the 600/700 MHz bands. Auction was considered to be the most appropriate approach since it provides a fair, transparent, objective and economically efficient means to determine to whom the spectrum should be assigned. It is also commonly used by many overseas economies in the assignment of spectrum for providing public mobile services.

15. A number of respondents to the consultation support or do not object to the proposal of assigning spectrum in the 700 MHz band by way of auction, but some MNOs suggest assigning spectrum in the 600 MHz band administratively as they envisage that there will be limited demand for it. Some respondents further suggest that, if an auction is conducted, the eligibility for participation should be confined to the incumbent MNOs. As discussed in paragraphs 10 – 13 above, the CA considers that there are likely to be competing demands for spectrum in both the 600 MHz and 700 MHz bands and thus considers it appropriate to assign all the spectrum in the 600/700 MHz bands by way of auction and, having regard to the proposed use of the newly available spectrum in the 600/700 MHz bands for providing public mobile services similar to other existing frequency bands being used for the same purpose, there are no overriding public policy reasons that have been identified for doing it otherwise. Assignment of spectrum by way of auction ensures that the spectrum will go into the hands of those who value it the most and hence will make the most efficient use of it, whether the assignee is an incumbent or a new entrant. Confining participation in the auction to the incumbent MNOs would be less likely to satisfy the objective of promoting innovative applications of the spectrum.

16. Based on the above considerations, **the CA decides to assign the spectrum in the 600/700 MHz bands by way of auction and all interested parties may apply for participation in the auction**, subject only to the following minimal qualification requirements –

- (a) lodging with the Government 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) demonstrating its capability to provide services in fulfilment of the licensing obligations to the satisfaction of the CA and submitting any other relevant supporting information which the CA may deem necessary.

Band Plan

17. Having regard to the widely recognised technical standard for 5G equipment and devices developed by the industry standardisation body 3rd Generation Partnership Project (“3GPP”)⁹, the CA proposed in the Consultation Paper to divide the spectrum in each of the 600/700 MHz bands into seven frequency blocks with a bandwidth of 2 x 5 MHz each. Most of the respondents to the consultation support or indicate no adverse comments on the proposed band plans, while one MNO proposes to divide the spectrum in each of the 600/700 MHz bands into three frequency blocks with a bandwidth of 2 x 10 MHz each and one frequency block with a bandwidth of 2 x 5 MHz to make it easier for bidders to acquire contiguous blocks.

18. The CA considers that a bandwidth of 2 x 5 MHz for each block will allow individual bidders the maximum flexibility to acquire any number of blocks in each of the frequency bands to form carriers of larger bandwidth subject to their technical and commercial considerations. Taking into account the wide support from the respondents of the proposed band plans, **the CA decides to maintain its view to divide the spectrum in each of the 600/700 MHz bands into seven frequency blocks with a bandwidth of 2 x 5 MHz each**, as depicted in [Figure 2](#) and [Figure 3](#) below.

⁹ According to 3GPP technical specification TS 38.104, the allowable channel bandwidths for the 600 MHz band are 2 x 5 MHz, 2 x 10 MHz, 2 x 15 MHz and 2 x 20 MHz, and those for the 700 MHz band are 2 x 5 MHz, 2 x 10 MHz, 2 x 15 MHz, 2 x 20 MHz, 2 x 30 MHz and 2 x 40 MHz.

Figure 2: Proposed Band Plan for the 600 MHz Band

	A1	A2	A3	A4	A5	A6	A7	
	5	5	5	5	5	5	5	
Lower band	617	622	627	632	637	642	647	652 MHz
Upper band	663	668	673	678	683	688	693	698 MHz

Figure 3: Proposed Band Plan for the 700 MHz Band

	B1	B2	B3	B4	B5	B6	B7	
	5	5	5	5	5	5	5	
Lower band	703	708	713	718	723	728	733	738 MHz
Upper band	758	763	768	773	778	783	788	793 MHz

Spectrum Cap

19. Having considered the overall spectrum holdings in various frequency bands of the incumbent MNOs and their holdings of 5G spectrum, as well as the expected keen demand for spectrum in the 600/700 MHz bands, the CA proposed in the Consultation Paper to set a cap for each bidder at 30 MHz (i.e. 2 x 15 MHz) for each of the 600/700 MHz bands, in order to prevent the over-concentration of spectrum in the hands of any individual MNO. Views in the submissions to the consultation are diverse, ranging from setting no spectrum cap at all to suggestions of caps at levels higher or lower than the proposed levels. One of the MNOs also considers that it is unreasonable to apply the same cap to all operators irrespective of their market shares.

20. The CA considers that the setting of spectrum caps in the proposed auction is necessary to prevent over-concentration of spectrum that may adversely affect the competitive supply of mobile services. The proposed cap, which allows a successful bidder to acquire at most 43% of the spectrum in the 600/700 MHz bands, is regarded by some respondents as too high. However, the CA considers that this does not give a true measure of spectrum concentration and that the analysis should be made in terms of the share of spectrum holdings in all the relevant frequency bands, including all the low- and mid-band frequencies as listed in the table at **Annex B**.

21. If the incumbent MNO currently holding the largest amount of spectrum acquires in total 60 MHz of spectrum in the 600/700 MHz bands, its share of all the

spectrum available for the provision of public mobile services will only increase slightly from 30.5% to 32%¹⁰, while the shares of spectrum holding of the other major MNOs will be in the range of 18% – 30%. Shares of spectrum holdings at these levels are unlikely to prevent effective competition in the mobile telecommunications market. The CA also considers that the same spectrum cap should apply to all bidders alike as it strikes the right balance between guarding against undue concentration of spectrum in the hands of some MNOs and the likely spectrum needs of the incumbent MNOs. **Therefore, the CA decides to maintain its view to impose a spectrum cap of 30 MHz on each bidder in the auction when bidding for each of the 600/700 MHz bands.**

Auction Format and Timing

22. The CA proposed in the Consultation Paper to adopt the SMRA auction format in the auction to be conducted for the assignment of spectrum in the 600/700 MHz bands. Views in the submissions to the consultation are diverse. There are MNOs supporting adoption of the SMRA auction format for the 700 MHz band or both the 600 MHz and 700 MHz bands, and also MNOs favouring the clock auction format. Some also propose to include the spectrum in the 850 MHz band¹¹ in the same auction.

23. The SMRA auction format allows spectrum in different frequency bands (which may be subject to different technical characteristics or regulatory conditions or requirements) to be auctioned simultaneously, where bidders are able to switch their bids between different frequency bands in the auction based on their business needs and taking into account the actual bidding situation for all the available frequency blocks in a holistic manner. As regards the issue of acquisition of contiguous blocks, with the adoption of a bandwidth of 2 x 5 MHz for each frequency block in each of the 600/700 MHz bands, there will only be seven blocks available in each band for bidding by four MNOs and any new entrants. The SMRA auction format remains a suitable approach in the circumstances given that the number of

¹⁰ Calculation of spectrum holding shares by MNOs does not include spectrum assignments in the 26 GHz and 28 GHz bands, as this millimetre-wave spectrum is of different radio propagation characteristics and serves different purposes as compared to the low- and mid-band frequencies in the provision of mobile services.

¹¹ On 19 August 2020, the CA and SCED also issued a consultation paper inviting comments on the proposed arrangements for the spectrum in the 850 MHz band upon expiry of the existing assignment for public mobile telecommunications services and the related SUF, which is available at: https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_2.pdf.

frequency blocks available for bidding for each of the 600/700 MHz bands is within a reasonable limit to facilitate competitive bidding while allowing bidders to acquire their preferred contiguous frequency blocks.

24. As regards the suggestion to include other spectrum in the same auction, the CA has conducted a holistic assessment of the spectrum that will be available to the market in a similar timeframe, and the proposed assignment and re-assignment arrangements which were set out for public consultation around the same time as that of the spectrum in the 600/700 MHz bands¹². Taking into account the submissions received in response to all these consultations, and the analysis set out in the respective statements issued on the same day regarding the assignment and re-assignment arrangements for the other spectrum¹³, **the CA decides that the spectrum in the 600/700 MHz bands will be put to auction together with the available spectrum in other available bands (namely spectrum in the 850 MHz, 2.5/2.6 GHz and 4.9 GHz bands) under a single auction in the SMRA format.** Putting these bands in the same auction in the SMRA format will enable bidders to switch their bids for frequency blocks in different bands during the bidding process, thus allowing maximum flexibility for them to devise their bidding strategy for the auction. The CA targets to conduct the auction in the fourth quarter of 2021, and will provide details of the auction in the information memorandum to be issued nearer the time of the auction.

Licensing Arrangements

25. MNOs in their submissions to the consultation are in general supportive of the proposed licensing arrangements, except for the comments on the proposed network and service rollout obligations which will be discussed in one of the sections below.

¹² Apart from consultations on the re-assignment of the spectrum in the 850 MHz band and the assignment of spectrum in the 600/700 MHz bands, the CA and SCED also issued consultation papers on their proposals on the arrangements for assignment of additional spectrum in the 4.9 GHz band and the related SUF, and re-assignment of spectrum in the 2.5/2.6 GHz band and the related SUF, respectively in July and September 2020, which are available at:

https://www.coms-auth.hk/filemanager/en/content_711/cp20200722.pdf and
https://www.coms-auth.hk/filemanager/en/content_711/cp20200923.pdf.

¹³ Statements on the arrangements for re-assignment of spectrum in the 850 MHz band, re-assignment of spectrum in the 2.5/2.6 GHz band, and assignment of additional spectrum in the 4.9 GHz band and the related SUF are available at:

https://www.coms-auth.hk/filemanager/statement/en/upload/557/850_mhz_statement.pdf,
https://www.coms-auth.hk/filemanager/statement/en/upload/556/2_5_2_6_ghz_statement.pdf and
https://www.coms-auth.hk/filemanager/statement/en/upload/555/4_9_ghz_statement.pdf.

Licensing and Validity Period

26. In line with the existing licensing regime for the provision of public mobile services, any new entrants or incumbent operators which have successfully bid for the spectrum in the 600/700 MHz bands will each be granted a new Unified Carrier Licence (“UCL”) to effect the assignment of the acquired spectrum for the provision of public mobile services. Schedule 2 of the Telecommunications (Carrier Licences) Regulation (Cap. 106V) requires UCLs to be issued for a term of 15 years from the day on which they are issued. The term of the frequency assignments will be for 15 years from around end 2021 and be coterminous with that of the newly issued licences, as has been consistently adopted for spectrum assigned for the provision of public mobile services in the past. For existing UCL holders which successfully acquire spectrum in the auction, they may apply to the CA to combine their existing UCLs with the new UCL to be issued.

Technology Neutrality

27. Spectrum in the 600/700 MHz bands will be assigned based on the principle of technology neutrality. At any time during the term of the spectrum assignments, MNOs will be free to refarm the spectrum concerned for more advanced uses, in tandem with the developments in mobile technologies, for the achievement of a higher transmission capacity and better business potential based on their commercial considerations, provided that the technology adopted is of a widely recognised standard for service provision, and subject to compliance with the licence conditions of the UCL to be granted for use of the spectrum.

Restriction on Frequency Swap

28. With regard to the proposal of restricting successful bidders to swap their assigned frequency blocks within the first five years of spectrum assignment, one MNO disagrees as a matter of principle with the proposal, stating that spectrum swapping allows operators to achieve more efficient use of their spectrum resources by combining spectrum blocks acquired from other operators to form contiguous frequency blocks for use with higher spectral efficiency.

29. The CA considers that the restriction on frequency swapping within the first five years of spectrum assignment strikes a balance between facilitation of competitive bidding to reflect the full market value of each individual frequency block

on the one hand and efficient spectrum utilisation on the other. Further, as discussed in paragraph 23 above, given that only seven blocks will be available for bidding for each of the 600/700 MHz bands, the SMRA format remains suitable to allow bidders to acquire contiguous blocks. Therefore, **the CA decides to maintain its position that frequency swapping within the first five years of assignment of spectrum in the 600/700 MHz bands will generally not be considered.**

Network and Service Rollout Obligations

30. The CA proposed in the Consultation Paper that each successful bidder of the spectrum would be required to roll out its network and services with the use of the assigned spectrum to establish 400 indoor base stations in the case of the 600 MHz band, and to provide a minimum coverage of 90% of population in the case of the 700 MHz band within the first five years from the date of spectrum assignment. Each successful bidder would also be required to lodge a performance bond for guaranteeing its compliance with the aforesaid network and service rollout obligations. Respondents to the consultation in general express no negative views on imposition of such an obligation, but consider the requirement to install 400 indoor base stations using the assigned spectrum in the 600 MHz band to be commercially not justifiable, in view of the restriction of the 600 MHz band to indoor use only and concern about the supply of compatible infrastructure and user equipment.

31. From a technical angle, due to the better propagation characteristics of the 600 MHz band compared with a high frequency band like the 3.3 GHz band which is also restricted to indoor operation, the number of radio base stations to be established for providing a good indoor coverage should be significantly reduced. Having also regard to the latest market and economic environment as well as the likely longer lead time required for installation of indoor facilities in general due to the need to reach commercial agreements with the relevant property owners, the CA considers that there is room to adjust to a lower level the requirement on network and service rollouts using the assigned spectrum in the 600 MHz band. On the other hand, the corresponding requirement on successful bidders of the spectrum in the 700 MHz band should be maintained, as the requirement is a reasonable one taking into account the long range propagation characteristics of the low frequency band and the densely populated environment in Hong Kong.

32. Based on the above considerations, **the CA decides to require each successful bidder of the spectrum in the 600 MHz band to establish at least**

100 indoor base stations and to require each successful bidder of the spectrum in the 700 MHz band to provide a minimum coverage of 90% of the population using the spectrum assigned to them within the first five years from the date of spectrum assignment. Each successful bidder of spectrum in either or both of the 600/700 MHz bands will also be required to lodge a performance bond for guaranteeing its compliance with the aforesaid network and service rollout obligations. The CA will specify the details of the performance bond requirements when the information memorandum for the auction of the spectrum in the 600/700 MHz bands is issued.

THE DECISION OF SCED ON THE RELATED SPECTRUM UTILISATION FEE

Level of SUF

33. Given that radio spectrum is a scarce public resource, it is incumbent upon the Government to ensure that the SUF of spectrum is set to reflect as closely as possible its full market value so that spectrum assignees, which run their commercial operation in a fully liberalised market, would put the spectrum so acquired to its most efficient use.

34. In paragraphs 14 – 16 above, the CA concludes that there are likely to be competing demands and that auction as a market-based approach should be used for the assignment of the spectrum in the 600/700 MHz bands. The SUF would therefore naturally be determined through auction whereby the bidders would determine the level of their bids based on clear information on the supply of spectrum and their assessment of the business potential and opportunities. The auction results would reflect the full market value of the spectrum. SCED decides to prescribe that the SUF of the spectrum in the 600/700 MHz bands will be determined by auction in accordance with section 32I(2) of the TO, subject to auction reserve prices to be specified nearer the time of the auction.

35. SCED has taken note of the prevailing global and local economic and investment environment, as well as the substantial investments required during the current early stage of 5G rollout. With these in mind, SCED does not intend to set the auction reserve prices at high levels which might discourage competition and bidders' eagerness to participate in the auction. Rather, SCED considers that it should

be set at levels that represent the minimum base value of the spectrum for the purpose of kick-starting the competitive bidding process, while balancing the need to forestall non-serious bidders. This coincides with MNOs' views received from the consultation that the auction reserve price should not be set at a high level.

Method of Payment

36. To allow for greater flexibility for spectrum assignees to make financial arrangement for the payment of SUF having regard to their individual circumstances, SCED proposed in the Consultation Paper that spectrum assignees would be given a choice to pay the SUF either by lump sum payment upfront or annual instalments.

37. All MNOs welcome the additional choice to pay the SUF by annual instalments. SCED decides to propose a regulation under section 32I(2) of the TO to prescribe that all spectrum assignees (which may include the MNOs and new entrants into the market) will be given a choice to pay the SUF either by –

- (a) lump sum payment upfront, which is the lump sum amount determined in auction; or
- (b) annual instalment, with the first instalment equivalent to the lump sum amount obtained in (a) above divided by 15 (i.e. the number of years of assignment), and subsequent instalments increased every year by 2%, the latest medium-range underlying inflation forecast, to reflect the time value of money to the Government.

IMPLEMENTATION OF THE SPECTRUM ASSIGNMENT ARRANGEMENTS

38. The CA and SCED will make the necessary arrangements to enable the assignment of the spectrum in the 600/700 MHz bands to proceed as per their respective decisions promulgated in this Statement. The CA will amend the Hong Kong Table of Frequency Allocations and SCED will prepare for the making of subsidiary legislation under the TO to prescribe the methods for determining the SUF of the spectrum and the choices of methods of SUF payment. Subject to the completion of the legislative process, the CA targets to conduct the auction for the

spectrum in the 600/700 MHz bands and complete the associated assignment in the fourth quarter of 2021.

39. For the avoidance of doubt, nothing in this Statement will affect, limit or prejudice the exercise of the powers of the CA and SCED under the CAO, TO or its subsidiary legislations.

Communications Authority
Secretary for Commerce and Economic Development
30 March 2021

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**Summary of Submissions to the Consultation Paper
and the Responses of
the Communications Authority and
the Secretary for Commerce and Economic Development**

INTRODUCTION

On 19 August 2020, the Communications Authority (“CA”) and the Secretary for Commerce and Economic Development (“SCED”) jointly issued a consultation paper to seek views and comments of the industry and other affected persons on the proposals in relation to arrangements for allocation and assignment of spectrum within the frequency range of 614 – 806 MHz for the provision of public mobile services including fifth generation (“5G”) services and the related spectrum utilisation fee (“SUF”) (“Consultation Paper”)¹. Among others, it included the proposal to assign 70 MHz of spectrum in the range 617 – 652 MHz paired with 663 – 698 MHz (“600 MHz band”) for indoor deployment and 70 MHz of spectrum in the range 703 – 738 MHz paired with 758 – 793 MHz (“700 MHz band”) for territory-wide deployment (collectively referred to as the “600/700 MHz bands”).

2. At the close of the public consultation on 14 October 2020, submissions were received from the following 10 respondents listed in alphabetical order² –

Mobile Network Operators (“MNOs”)

- (a) China Mobile Hong Kong Company Limited (“CMHK”)
- (b) Hong Kong Telecommunications (HKT) Limited (“HKT”)
- (c) Hutchison Telephone Company Limited (“Hutchison”)
- (d) SmarTone Mobile Communications Limited (“SmarTone”)

Other Commercial Firms or Industry Organisations

- (e) CelluWare Research Laboratory Limited (“CelluWare”)
- (f) Comba Telecom Limited (“Comba”)

¹ The Consultation Paper is available at:
https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_1.pdf.

² Submissions to the Consultation Paper are available at:
https://www.coms-auth.hk/en/policies_regulations/consultations/completed/tele_services/index_id_2263.html.

- (g) Global mobile Suppliers Association (“GSA”)
- (h) Hong Kong Applied Science and Technology Research Institute Company Limited (“ASTRI”)
- (i) The GSMA

Individual

- (j) Simon Lo

3. The CA and SCED set out in this Annex their respective responses to the views and comments received in the public consultation. For the avoidance of doubt, the CA and SCED have taken into account and given thorough consideration to all the relevant issues raised in the submissions received, though not all of the issues raised may specifically be mentioned or addressed herein. Please refer to the Statement to which this Annex is attached for the respective decisions made by the CA and SCED on the matter.

4. The responses set out in this Annex are without prejudice to the exercise of the powers by the CA or SCED under the Communications Authority Ordinance (Cap. 616), Telecommunications Ordinance (Cap. 106) (“TO”) or any subsidiary legislation.

PROPOSED AMENDMENT TO THE HONG KONG TABLE OF FREQUENCY ALLOCATIONS FOR THE 614 – 806 MHz BAND

Question 1: Do you have any views on the proposed changes of frequency allocation to mobile service for the entire 614 – 806 MHz band?

Views and Comments of the Respondents

5. All respondents, except CelluWare, support allocating the entire 614 – 806 MHz band to mobile service on a primary basis and agree to the proposed amendment to the Hong Kong Table of Frequency Allocations. Three MNOs (HKT, Hutchison and SmarTone), GSA and GSMA suggest that the CA should consider making available the 600 MHz band spectrum also for outdoor use through further coordination with the Mainland authorities. HKT further proposes imposing a “restriction zone” along the area bordering Hong Kong and the Mainland such that the band will be restricted for indoor use only in these areas but can be deployed for

both outdoor and indoor use elsewhere. A number of respondents, including HKT, Hutchison, SmarTone, Comba, GSA, GSMA and the individual respondent, suggest that the 2 x 10 MHz of spectrum in the 738 – 748 MHz band paired with 793 – 803 MHz band reserved for government use (“Reserved Spectrum”) should also be made available for the provision of public mobile services. Hutchison also comments that the CA should take a holistic view on spectrum planning and release more spectrum particularly in the 800 MHz and 900 MHz bands for mobile use. CelluWare, however, opines that it is unnecessary to allocate additional bandwidth to 5G applications. It considers that the 600/700 MHz bands should be reserved for new innovative applications, instead of public 5G services, as it considers that the mobile service market is already saturated.

Responses of the CA

6. The CA notes the support from the respondents on the proposed allocation of the entire 614 – 806 MHz band to mobile service on a primary basis. Regarding the comments on making available the 600 MHz band for outdoor use, as explained in the Consultation Paper, the 600 MHz band is being used in the Mainland for TV broadcasting service. While the CA recognises that the characteristics of the 600 MHz band make it well suited for outdoor, wide area mobile services, it nevertheless considers that the restriction to indoor use is justified by the need to avoid interference. Given the close proximity of Hong Kong to the Guangdong Province, there would be overspill of TV broadcast signals to an extensive part of Hong Kong, causing interference to any outdoor operation of mobile service in the 600 MHz band, and the latter may in turn generate interfering signals to the broadcasting service in the neighbouring areas of Guangdong. Accordingly, establishing “restriction zones” for the 600 MHz band is not a feasible solution to enable its outdoor operation. Furthermore, given that the 500 MHz band (i.e. in the range of 470 – 606 MHz) would continue to be used for TV broadcasting in Hong Kong, restriction of the 600 MHz band to indoor operation will also minimise the possibility of interference between the local broadcasting service in the 500 MHz band and mobile service in the 600 MHz band.

7. As for the request of the respondents to make available the Reserved Spectrum for the provision of public mobile services, it has to be pointed out that according to the Radio Spectrum Policy Framework (“Spectrum Policy Framework”)³ promulgated by the Government in April 2007, one of the key spectrum policy

³ The Spectrum Policy Framework is available at:
<https://www.cedb.gov.hk/assets/resources/ccib/policies/spectrum.pdf>.

objectives is to ensure that necessary spectrum is reserved for services to be provided by or on behalf of the Government. The CA considers that the proposal has already struck a proper balance of spectrum use between commercial mobile services and Government services.

8. With regard to Hutchison's proposal of releasing more spectrum particularly in the 800 MHz and 900 MHz bands for mobile use, the CA would like to highlight that spectrum in the relevant bands has been assigned for different radiocommunications purposes (including trunked radio systems, licence-exempted applications and government uses)⁴. While the CA acknowledges the demand for spectrum to facilitate development of the mobile telecommunications market and will take into account Hutchison's suggestion in its on-going effort to identify suitable spectrum, or reform spectrum as necessary, to meet the demand, the CA must also achieve a balance by ensuring that the demand for other legitimate uses and from users of spectrum could be reasonably met as well. For the time being, the CA considers it appropriate to maintain the existing frequency allocations in the 800 MHz and 900 MHz bands.

9. In response to CelluWare's proposal of reserving the spectrum in the 600/700 MHz bands for new innovative services instead of deploying the bands for 5G services, the CA would emphasize that under the technology neutral approach in spectrum assignment, spectrum assignees are free to make use of the spectrum acquired to provide innovative public mobile services or applications based on the latest technologies available (i.e. not confined to 5G technology), provided that the technology adopted is of a widely recognised standard for service provision, and subject to compliance with the relevant licence conditions.

10. Having regard to the support received from all respondents to the consultation, the CA considers it appropriate to uphold its proposal of allocating the entire 614 – 806 MHz band to mobile service on a primary basis.

⁴ For instance, the 806 – 818 MHz band paired with the 851 – 863 MHz band have been heavily used by trunked radio systems; the 818 – 819.1 MHz band paired with the 863 – 864.1 MHz band are used by cross-border trunked radio systems; the 819.1 – 823.1 MHz band is exempted from licensing for use by the general public under the Telecommunications (Telecommunications Apparatus) (Exemption from Licensing) Order fulfilling the conditions stipulated therein; and the 882.5 – 885 MHz and 927.5 – 930 MHz bands are currently used by Government users.

PROPOSED ARRANGEMENTS FOR ASSIGNMENT OF THE SPECTRUM IN THE 600/700 MHz BANDS

Assignment of Spectrum by Auction

Question 2: Do you have any views on assigning the spectrum in the 600/700 MHz bands by way of auction and allowing all interested parties to apply for participation in the auction?

Views and Comments of the Respondents

11. Two MNOs (CMHK and HKT) as well as ASTRI and GSMA support or do not object to the CA's proposal of assigning the spectrum in the 600/700 MHz bands by way of auction and allowing all interested parties to apply for participation in the auction, while Comba is of the view that only the incumbent MNOs should be eligible for the auction. Hutchison also supports assignment of the spectrum in the 700 MHz band by way of auction, but opines that the incumbent MNOs should be accorded priority in spectrum assignment.

12. Due to the restriction for indoor use only and current limited equipment supply for the 600 MHz band, SmarTone expresses reservation on the existence of market demand for spectrum in the band and Hutchison considers that it is not the right time to assign the spectrum in the band by way of auction. They propose adopting an administrative approach for the assignment of spectrum in the 600 MHz band to existing MNOs if the CA is minded to assign the spectrum concerned.

Responses of the CA

13. There is generally no dispute about the likelihood of competing demands for spectrum in the 700 MHz band. The CA's assessment of likely competing demands for spectrum in the 600 MHz band is set out in paragraph 12 of the Statement. In accordance with the guiding principle of spectrum management as set out in the Spectrum Policy Framework, where the CA considers that there are likely to be competing demands for the spectrum in question, a market-based approach should be adopted for spectrum assignment unless there are overriding public policy reasons to do otherwise. Auction is considered the most appropriate market-based approach as it provides a fair, transparent, objective and economically efficient means to determine the assignee who can make the best use of the spectrum, and values it most. Further, the CA finds no justification for restricting the eligibility

for participation in the auction for spectrum assignment only to the incumbent MNOs or giving any priority to them in spectrum assignment.

14. As explained in paragraphs 14 – 15 of the Statement, the CA considers it appropriate to maintain its proposal that the spectrum in the 600/700 MHz bands should be assigned by way of auction and all interested parties may apply for participation in the auction, subject to their meeting the minimal qualification requirements for registering bidders' interest and demonstrating the capability to provide satisfactory service.

Band Plan

Question 3: Do you have any views on the proposal that the spectrum in each of the 600/700 MHz bands be divided into seven frequency blocks each with a bandwidth of 2 x 5 MHz?

Views and Comments of the Respondents

15. Eight out of the ten respondents to the consultation (except HKT and Comba) either support or express no adverse comments on the proposed band plans. HKT proposes the spectrum to be divided into three frequency blocks with a bandwidth of 2 x 10 MHz each and one frequency block with a bandwidth of 2 x 5 MHz in each of the 600/700 MHz bands, as MNOs would seek to obtain at least one contiguous block of 2 x 10 MHz so that the most efficient use could be made of the spectrum. Comba comments that a block of 2 x 5 MHz would be too small to enable meaningful and effective 5G employment and suggests allowing bidders to bid jointly and/or to share the spectrum assigned.

Responses of the CA

16. The CA's proposal of dividing the spectrum in each of the 600/700 MHz bands into seven frequency blocks of 2 x 5 MHz in each band provides the maximum flexibility for bidders to acquire their desired number of frequency blocks in each frequency band subject to their technical and commercial considerations. As regards the suggestions of joint bidding and spectrum sharing, they are contrary to the established auction rules which are set to ensure competitive bidding and compliance with relevant regulatory requirements in spectrum assignment. Having regard to the technical specifications of 5G equipment operating in the 600/700 MHz bands and the wide support from the respondents, the CA

maintains its view to divide the available spectrum in each of the 600/700 MHz bands into seven frequency blocks with a bandwidth of 2 x 5 MHz each.

Spectrum Cap

Question 4: Do you have any views on the proposed spectrum cap of 30 MHz in each of the 600/700 MHz bands to be imposed on each bidder?

Views and Comments of the Respondents

17. CMHK agrees with the proposed cap of 2 x 15 MHz in each of the 600/700 MHz bands. SmarTone proposes lowering the spectrum cap to 2 x 10 MHz in each of the 600/700 MHz bands, while Hutchison shares a similar view in respect of the 700 MHz band. HKT and GSMA do not in principle support the imposition of any spectrum cap. HKT also considers that it is unreasonable for the same cap to apply to all operators irrespective of their market share. Comba suggests that the spectrum acquired can be shared among the incumbent MNOs. Otherwise, it proposes a spectrum cap of 2 x 20 MHz in each of the 600/700 MHz bands. ASTRI encourages spectrum assignees to explore neutral host models under which they share the deployment and operations of 5G network infrastructure and thereby having greater flexibility in combining their spectrum resources to enable high quality 5G services.

Responses of the CA

18. As explained in paragraphs 19 – 21 of the Statement, taking into account the overall spectrum holding in various frequency bands of the incumbent MNOs and the expected keen demand for the spectrum in the 600/700 MHz bands, there is a need to set spectrum caps on each bidder's acquisition of frequency blocks in the 600/700 MHz bands to prevent over-concentration of spectrum in the hands of any individual MNO and to address the risk of an adverse effect on market competition. This is in line with the CA's duty to have regard to the promotion of competition if it considers it to be relevant when performing its functions under section 4(4)(c) of the CAO. Taking into account the diverse views received in the submissions to the consultation in regard to the level of the spectrum caps, the CA considers it appropriate to maintain its proposal to impose a spectrum cap of 30 MHz (i.e. 2 x 15 MHz) in each of the 600/700 MHz bands. The CA considers that the spectrum cap should be applied to all bidders alike, including the incumbent MNOs and new entrants, as it strikes the right balance between guarding against undue concentration of spectrum in the hands of some MNOs and the likely spectrum needs

of the incumbent MNOs. Regarding the feasibility of using a neutral host model to enable more efficient use of spectrum resources, this matter should better be explored and discussed by the MNOs which acquire the spectrum in future. The CA would be open to considering any innovative arrangement subject to observance of the relevant regulatory requirements on network sharing⁵.

Auction Format

Question 5: Do you have any views on the adoption of the simultaneous multiple-round ascending auction (“SMRA”) auction format for the assignment of the spectrum in the 600/700 MHz bands?

Views and Comments of the Respondents

19. CMHK agrees to adopting the SMRA auction format for the spectrum assignment in the 600/700 MHz bands while Hutchison opines that it should be applied only to auction of the 700 MHz band. HKT supports the adoption of the SMRA auction format for the 600/700 MHz bands if the band plans for each band are set with three frequency blocks of 2 x 10 MHz each and one frequency block of 2 x 5 MHz. However, if the band plans consist of seven frequency blocks of 2 x 5 MHz each in each of the 600/700 MHz bands, then it considers that the clock auction format should be adopted. SmarTone proposes the clock auction format for spectrum assignment in the 700 MHz band in order to enable acquisition of contiguous frequency blocks by bidders.

20. In the submissions, the respondents also comment on the possible combination of frequency bands in the auction. HKT and Hutchison suggest a single auction covering spectrum in the 700 MHz and 850 MHz⁶ bands. HKT also opines that since the 600 MHz band is for indoor deployment only, it should be auctioned separately. Nevertheless, CMHK suggests grouping all sub-1 GHz bands available, i.e. 600 MHz, 700 MHz and 850 MHz bands in a single auction.

⁵ Please refer to the Telecommunications Regulatory Affairs Advisory Committee Paper No. 2/2016 on Mobile Network Sharing, which is available at:
https://www.ofca.gov.hk/filemanager/ofca/en/content_757/traac2_2016.pdf.

⁶ The 850 MHz band includes spectrum in the 825 – 832.5 MHz band paired with the 870 – 877.5 MHz band which is due for re-assignment in November 2023. The CA and SCED issued a consultation paper on 19 August 2020, proposing the arrangements for the re-assignment of this band upon expiry of the existing assignment and the related SUF, which is available at:
https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_2.pdf.

Responses of the CA

21. As explained in paragraph 23 of the Statement, the CA considers that the SMRA auction format remains suitable in the circumstances given that the number of frequency blocks available for bidding is within a reasonable limit to facilitate competitive bidding and allow bidders to acquire their preferred contiguous blocks. The CA can see no good reason to separately auction the 600 MHz band as putting both the 600 MHz band and 700 MHz band in the same SMRA auction will give bidders more flexibility in devising an overall bidding strategy.

22. As regards the suggestion to include other spectrum in the same auction, having undertaken a holistic assessment of the spectrum that will be available for release to the market in a similar timeframe, the CA considers that the spectrum in the 600/700 MHz bands could be put to auction together with other available spectrum in other available bands (namely spectrum in the 850 MHz, 2.5/2.6 GHz and 4.9 GHz bands) under a single auction in the SMRA format. With such arrangement, bidders will be able to switch their bids for frequency blocks in different bands during the bidding process. Please see paragraph 24 of the Statement for details.

LICENSING ARRANGEMENTS

Network and Service Rollout Obligations

Question 6: Do you have any views on the network and service rollout obligations proposed to be imposed on the successful bidders of the spectrum in the 600/700 MHz bands and the associated performance bond proposed for guaranteeing compliance?

Views and Comments of the Respondents

23. CMHK agrees to the proposed network and service rollout obligations to be imposed on successful bidders of spectrum in the 600/700 MHz bands. On the other hand, the other three MNOs (HKT, Hutchison and SmarTone) suggest reducing the number of indoor base stations required to be installed using the assigned spectrum in the 600 MHz band, given that the spectrum is to be used indoors only and the uncertainties in the supply of network and user equipment. They consider the proposal of installing 400 indoor base stations in the Consultation Paper to be commercially not justifiable. HKT suggests that the rollout obligation should be

much less than 400 indoor base stations and SmarTone further proposes it to be set at 100 indoor base stations instead. As to the network and service rollout obligations proposed for the assignment of spectrum in the 700 MHz band, no adverse comments have been received.

24. CMHK agrees to the imposition of a performance bond for guaranteeing compliance with the network and service rollout obligation and no adverse comments are noted from the other respondents except HKT and GSMA. They do not agree with the requirement for a performance bond, as it is unnecessary to ensure compliance with the rollout obligations and the funds should be better spent on network deployment.

Responses of the CA

25. In order to ensure efficient use of the spectrum in the 600/700 MHz bands, the imposition of network and service rollout obligations on successful bidders of the spectrum together with the performance bond requirement are justifiable and this practice has been well established and accepted by the industry in the past auctions of spectrum. If MNOs would like to minimise the financial cost spent on the performance bonds, they are encouraged to meet the rollout requirements in a speedy manner so as to secure an early release of the performance bonds.

26. In regard to the proposal of reducing the number of indoor base stations required to be installed using the assigned spectrum in the 600 MHz band within the first five years from the date of spectrum assignment, the CA notes the concern of the industry. As explained in paragraph 31 of the Statement, the CA considers that the number of indoor base stations required to be installed using the assigned spectrum in the 600 MHz band can be reduced to 100. The relaxation of the rollout requirement to be met within the first five years of spectrum assignment should also relieve the concern of the industry about the limited supply of equipment and devices supporting the 600 MHz band in the initial period of implementation.

SPECTRUM UTILISATION FEE

Level of SUF and Method of Payment

Question 7: Do you have any views on the proposal in relation to the setting and collection of SUF as specified in paragraphs 32 and 33 of the Consultation Paper?

Views and Comments of the Respondents

27. All MNOs support SCED's proposal that each spectrum assignee will be given a choice of paying the SUF by lump sum upfront or by annual instalments. CMHK proposes that the spectrum assignee should be given a choice to pay off the then outstanding SUF after the first assignment year under the option of making annual instalment payments. HKT suggests that the pre-set fixed percentage applied to SUF instalments should be reduced.

28. Regarding the level of SUF, all MNOs consider that the reserve price should be set at a low or reasonable level.

Responses of SCED

29. SCED notes the support by MNOs for the choices provided for the payment method of SUF. In response to the proposed arrangement to pay off the outstanding SUF after the first assignment year under the option of making annual instalment payments, SCED sees the need to keep the payment mechanism simple, and considers that the current options have already provided operators flexibility in payment of SUF. Regarding the suggestion to reduce the increment of the pre-set fixed percentage applied to each SUF instalment, SCED responds that the increment has the function of reflecting the time value of money to the Government, such that the amount obtained by the Government would not be reduced in real terms. In line with the latest lower medium-range underlying inflation forecast, the increment has been reduced to 2%.

30. The level of SUF will be determined by way of auction, which is the method which the CA decides to adopt for assignment of the spectrum concerned. SCED considers that the auction reserve price should be set at a level for kick-starting the competitive bidding process instead of a pre-estimated market price. A fine balance should also be achieved between ensuring the seriousness of bids and encouraging competition and participation in the auction exercise. When deciding the reserve price nearer the time of the auction, SCED will take into account the prevailing global and local economic and investment environment, as well as the substantial investments required during the current early stage of 5G rollout.

Communications Authority

Secretary for Commerce and Economic Development

30 March 2021

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**Table 1: Distribution of spectrum below 6 GHz by major operators
as at 30 September 2021 (MHz)**

	850/ 900 MHz	900 MHz	1800 MHz [^]	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
CMHK		10	40	19.6	30	40	20	60	40	259.6	27.8%
HKT	15	20	40	29.6		60	30	50	40	284.6	30.5%
Hutchison	10	10	30	29.6	30	20	30	40		199.6	21.4%
SmarTone	10	10	40	39.6		20	20	50		189.6	20.3%
Total	35	50	150	118.4	60	140	100	200	80	933.4	100%

Notes:

([^]) Distribution of the spectrum in the 1800 MHz band is based on the arrangements for re-assignment of the spectrum to be effective on 30 September 2021.

(*) Assuming that the 40 MHz of spectrum in the 2.5/2.6 GHz band held by Genius Brand Limited, a joint venture between HKT and Hutchison, is divided equally between HKT and Hutchison for calculation purpose.