

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

**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**

30 March 2021

PURPOSE

This Statement promulgates the decision of the Communications Authority (“CA”) on the arrangements for re-assignment of 90 MHz of spectrum in the 2.5/2.6 GHz band upon expiry of the existing assignments on 30 March 2024 for the provision of public mobile services, and 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 adopt a market-based approach for re-assignment of 90 MHz of spectrum in the 2.5/2.6 GHz band for the provision of public mobile services upon the expiry of the existing assignments on 30 March 2024.

S2. The 90 MHz of spectrum in the 2.5/2.6 GHz band will be divided into nine frequency blocks with a bandwidth of 2 x 5 MHz each. A spectrum cap of 50 MHz (i.e. 2 x 25 MHz) will be imposed on each bidder in the auction for the spectrum. Subject to the connected bidder restriction, all interested parties, including incumbent mobile network operators (“MNOs”) or new entrants, may apply for participation in the auction.

S3. The 90 MHz of spectrum in the 2.5/2.6 GHz band will be put to auction together with other available spectrum (namely spectrum in the 600 MHz, 700 MHz, 850 MHz, 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.

S4. A technology neutral approach will be adopted for the re-assignment of the 90 MHz of spectrum in the 2.5/2.6 GHz band for a term of 15 years whereby the assignee may freely use any technology of a widely recognised standard for service provision, subject to compliance with the licence conditions of the unified carrier licence (“UCL”) to be granted for use of the spectrum.

S5. Frequency swapping from the commencement of the new assignment term for the 90 MHz of spectrum in the 2.5/2.6 GHz band in March 2024 until May 2028, when the remaining 50 MHz of spectrum in the 2.5/2.6 GHz band is re-assigned upon expiry of the existing assignments will generally not be considered.

S6. Within the first five years of spectrum re-assignment, each successful bidder of the 90 MHz of spectrum in the 2.5/2.6 GHz band will be required to provide a minimum coverage of 90% of population and lodge a performance bond as a guarantee of its compliance with the network and service rollout obligations. If an incumbent spectrum assignee in the 2.5/2.6 GHz band successfully acquires any of the 90 MHz of re-assigned spectrum in the 2.5/2.6 GHz band, it may choose to provide network coverage figures demonstrating that its existing network operating in the 2.5/2.6 GHz band has already fulfilled the 90% minimum population coverage requirement, without the need to provide a performance bond.

S7. The SUF of the 90 MHz of spectrum in the 2.5/2.6 GHz band will be determined through auction, subject to an auction reserve price 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

A total of 90 MHz of spectrum in the 2.5/2.6 GHz band was assigned in March 2009 for the provision of public mobile services, and the existing assignments are due to expire in March 2024. The spectrum assignments are made to three

assignees, each with an amount of 2 x 15 MHz of spectrum in the frequency ranges of 2500 – 2515 MHz paired with 2620 – 2635 MHz and 2540 – 2570 MHz paired with 2660 – 2690 MHz (hereafter referred to as “Available Spectrum”) ^{1,2}.

2. Against the above background, the CA and SCED jointly issued a consultation paper on 23 September 2020 (“Consultation Paper”) ³ to seek views and comments of the industry and other affected persons on the proposed arrangements for re-assignment of the Available Spectrum upon expiry of the existing assignments on 30 March 2024 and the methods for setting the related SUF.

3. Upon the close of the consultation, seven submissions were received. Having carefully considered the views and comments received, the CA and SCED set out in this Statement their respective decisions on the arrangements for re-assignment of the Available Spectrum and the related SUF. Salient views and comments of the respondents, as well as the responses of the CA and SCED, are summarised in the **Annex**.

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 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.

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

² The arrangements for re-assignment of another 2 x 25 MHz or 50 MHz of spectrum in the 2.5/2.6 GHz band with the existing assignments expiring in May 2028 is outside the scope of the present re-assignment exercise.

³ The Consultation Paper is available at:
https://www.coms-auth.hk/filemanager/en/content_711/cp20200923.pdf.

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”)⁴ promulgated by the Government in April 2007 sets out the policy objectives and the guiding principles in spectrum management which the CA should take into account in discharging its spectrum management responsibilities under the TO. By a statement issued in April 2007, the former 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 TO⁵.

7. The Spectrum Policy Framework makes it clear that there is no legitimate expectation that there will be any right of renewal or right of first refusal upon the expiry of a spectrum assignment under the TO. The decision whether a new spectrum assignment, with the same or varied radio frequencies, should be given to the spectrum assignee would be made and notified to the spectrum assignee within a reasonable time before the expiry of its spectrum assignment. In considering assignment of spectrum in general, 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.

⁴ The Spectrum Policy Framework is available at:
<https://www.cedb.gov.hk/assets/resources/ccib/policies/spectrum.pdf>.

⁵ 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 CA'S DECISION ON ARRANGEMENTS FOR RE-ASSIGNMENT OF THE AVAILABLE SPECTRUM UPON EXPIRY OF THE EXISTING ASSIGNMENTS

Demand for the Available Spectrum

8. The CA set out its assessment in the Consultation Paper that there are likely to be competing demands for the Available Spectrum, given that it is currently fully deployed for the provision of the fourth generation mobile ("4G") services, and in view of the limited supply of the mid-band spectrum (between 1 GHz and 6 GHz) with long range radio propagation characteristics for the provision of wide area coverage and the relatively wider bandwidth as compared to the low-band spectrum (below 1 GHz) for the provision of transmission capacity. Further, even though the 2.5/2.6 GHz band is currently used mainly for the provision of 4G services, it has good potential to be refarmed for provision of the fifth generation mobile ("5G") services, given that it has been specified by the industry standardisation body 3rd Generation Partnership Project ("3GPP") as one of the frequency bands that can be used for deployment of 5G services based on 5G New Radio technology.

9. In their submissions to the consultation, respondents generally do not dispute the existence of competing demands for the Available Spectrum. A number of respondents also urge the CA to release further 50 MHz of spectrum, including 40 MHz of it assigned for government use and 10 MHz of it being used as guard bands, located between the uplink and downlink frequencies in the 2.5/2.6 GHz band for public mobile services. Their advocate reflects a keen demand for the 2.5/2.6 GHz band. However, it has to be pointed out that according to the Spectrum Policy Framework, the CA has the responsibility to ensure that necessary spectrum is reserved for services to be provided by or on behalf of the Government. The CA has no current plan to change the existing allocation between Government services and public mobile services for spectrum in the 2.5/2.6 GHz band.

10. Having regard to the submissions received, **the CA maintains its view that there are likely to be competing demands for the Available Spectrum.**

Re-assignment of the Available Spectrum by Auction

11. 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 re-assignment of the Available Spectrum upon expiry of the existing assignments in March 2024 (“Proposed Approach”). In this regard, auction was considered the most appropriate way since it provides a fair, transparent, objective and economically efficient means to determine to whom the spectrum should be re-assigned. It is also commonly used by overseas economies in the assignment of spectrum for providing public mobile services.

12. While two of the respondents support the proposal of re-assigning the Available Spectrum upon expiry of the existing assignments in March 2024 by way of auction, some respondents including the incumbent spectrum assignees suggest that the current assignment period of the Available Spectrum should be administratively extended by slightly more than four years for it to align with the expiry date in May 2028 of the assignments of another 50 MHz of spectrum in the 2.5/2.6 GHz band (“Remaining Spectrum”)⁶, so that both the Available Spectrum and the Remaining Spectrum can be re-assigned at the same time (“Extension Approach”), in order to enable the attainment of higher spectral efficiency and allow more time for the industry to consider whether to use the Frequency Division Duplex (“FDD”)⁷ or Time Division Duplex (“TDD”)⁸ technology for the 2.5/2.6 GHz band. Should the Available Spectrum be re-assigned as proposed in the Consultation Paper, HKT, Hutchison and GBL suggest that a right of first refusal (“RFR”) should be offered to the incumbents for re-assignment of the spectrum to ensure service continuity (“RFR Approach”).

13. Having regard to the different views of the respondents on the approach for re-assignment of the Available Spectrum, the CA has carefully evaluated the pros and cons of the Proposed Approach and the Extension Approach in terms of meeting the multiple objectives in spectrum re-assignment, viz. ensuring customer service continuity, efficient spectrum utilisation, promotion of effective competition, and encouragement of investment and promotion of innovative services, as set out in the paragraphs below.

⁶ See Footnote 2.

⁷ The FDD mode of operation means that the uplink and downlink communications are separated in the frequency domain via different frequency bands. The 2.5/2.6 GHz band is currently deployed based on the FDD mode of operation.

⁸ The TDD mode of operation means that the uplink and downlink communications are separated in the frequency domain via different time slots.

Ensuring Customer Service Continuity

14. The CA set out its assessment in the Consultation Paper that customer service continuity could be ensured under the Proposed Approach even if the incumbent assignees (or any one of them) were not able to acquire any of the Available Spectrum in the re-assignment exercise, since they could still use their existing holdings of the Remaining Spectrum along with spectrum in the other frequency bands to continue the provision of 4G services to their customers. Those respondents advocating the RFR Approach argue that since the 2.5/2.6 GHz band is currently one of the major bands supporting the provision of 4G services and is expected to remain so in 2024, the possible changing hands of spectrum holdings due to re-assignment in 2024 will induce risk to service continuity especially in the indoor and underground locations such as the mass transit railway (“MTR”) premises.

15. The CA is of the view that there should not be concerns about customer service continuity under the Proposed Approach as only a small part of the total amount of spectrum used for the provision of public mobile services will be re-assigned in 2024. As shown in the Table 1 below, the Available Spectrum constitutes only 24% of the 370 MHz of spectrum currently deployed for the provision of 4G services and less than 10% of the 932.2 MHz of spectrum currently deployed to provide all types of mobile services. Even under the scenarios that one or more of the incumbent assignees fail to acquire any of the Available Spectrum in the re-assignment exercise, they can continue to use the Remaining Spectrum and spectrum in the 900 MHz, 1800 MHz, 1.9 – 2.2 GHz and 2.3 GHz bands to provide 4G services. Under the technology neutral principle, MNOs are also free to refarm spectrum in other frequency bands currently used for providing 2G / 3G services to support the deployment of the more efficient 4G technology. Furthermore, there will be opportunities for MNOs to bid for additional spectrum in the 600 MHz, 700 MHz and 4.9 GHz bands to be released by the CA in this year.

Table 1: Application of spectrum below 6 GHz in provision of public mobile telecommunications services⁹

	CDMA (MHz)	2G (MHz)	3G (MHz)	4G (MHz)	5G (MHz)	Total (MHz)
800 MHz	15					15
850/900 MHz			20			20
900 MHz				50		50
1800 MHz		28.8		120		148.8
1.9-2.2 GHz			19.6		98.8	118.4
2.3 GHz				60		60
2.5/2.6 GHz				90 (Available Spectrum) 50 (Remaining Spectrum)		140
3.3 GHz					100	100
3.5 GHz					200	200
4.9 GHz					80	80
Total	15	28.8	39.6	370	478.8	932.2

16. The specific concern about continuity of customer services in the indoor and underground areas such as MTR premises is not warranted. The Remaining Spectrum will not be affected by the re-assignment of the Available Spectrum in 2024 under the Proposed Approach. Further, the CA notes that there is already full coverage of 4G services at MTR premises using the 900 MHz, 1800 MHz and 1.9 – 2.2 GHz bands. MNOs have also been working with MTR Corporation to include the 2.3 GHz band as well as the 2.5/2.6 GHz band as additional spectrum for the provision of 4G services at more than 30 MTR stations with high passenger flows for completion by 2021, together with installation of the frequency agile equipment which enables more flexible and efficient system reconfiguration in case of variations in frequency assignments. In addition, following the launch of 5G services in April 2020, the gradual rollout of 5G networks at MTR premises will absorb a portion of 4G traffic by the time the Available Spectrum is re-assigned in 2024.

17. Based on the above considerations, the CA maintains its view that there should not be concerns about continuity of customer services upon re-assignment of

⁹ The type of mobile services supported by each individual frequency band refers to the highest order of use for which the corresponding frequency band is being deployed. For example, spectrum in the 1.9 - 2.2 GHz band is deployed by MNOs for the provision of both 4G and 5G services, it is presented as being deployed for 5G services in the table.

the Available Spectrum under the Proposed Approach that would amount to an overriding public policy reason to deviate from the market-based approach and offer a RFR to the incumbent assignees.

Efficient Spectrum Utilisation

18. Proponents of the Extension Approach consider that it will enable the achievement of higher spectral efficiency as it will have the effect of making available 2 x 70 MHz of contiguous paired spectrum in the 2.5/2.6 GHz band upon re-assignment in 2028 which will address fragmentation of spectrum within the 2.5/2.6 GHz band. However, whether fragmentation may occur or not mainly depends on the results of bidding in the auction. Any fragmentation can be addressed in other ways without adopting the Extension Approach, for example by network sharing arrangements among the MNOs. More importantly, the CA has indicated in the Consultation Paper that following the re-assignment of all the spectrum in the 2.5/2.6 GHz band in 2028, it would consider relevant proposals for frequency swapping from MNOs with a view to enhancing spectral efficiency.

19. On the other hand, the RFR Approach does not have the advantages of a market-based mechanism under the Proposed Approach which ensures an optimal distribution of spectrum among those who can make the best use of it. Taking into account also views of the respondents (including those who are not incumbent assignees of the Available Spectrum) who support the Proposed Approach, the CA considers that re-assignment of the Available Spectrum in 2024 provides an early and equal opportunity for MNOs to optimise their spectrum holdings based on their holdings of the other mid-band spectrum and having regard to their commercial and technical considerations. Some MNOs may want to acquire additional spectrum in the band to enhance their network capacity and transmission speed.

Promotion of Effective Competition

20. A market-based re-assignment of the Available Spectrum under the Proposed Approach would encourage MNOs to consider their needs for the spectrum when deciding whether or not to bid for it. In turn this should lead to it being put to the most efficient use to improve coverage, data speed and service offerings at affordable prices, thus promoting effective competition that will benefit consumers. On the contrary, both the Extension Approach and the RFR Approach, by maintaining the status quo, will not be able to further promote competition.

Encouragement of Investment and Promotion of Innovative Services

21. Two of the respondents supporting the Extension Approach opine that the acquisition of larger contiguous blocks of spectrum from auction would necessitate greater investment by operators which would also promote service innovation. The CA nevertheless considers that the Proposed Approach does not preclude the acquisition of larger contiguous blocks of spectrum by the MNOs which may be achieved by other means, as explained in paragraph 18. In any case, investment in a network would involve the MNO making a complex assessment as whether its overall network capacity is sufficient to meet the market demand using the spectrum resources and technologies available to it or whether further investment is required. The CA is not in a position to predict the outcome of the assessments that MNOs may make. The Proposed Approach, by providing an opportunity for MNOs to optimise their spectrum holdings in the 2.5/2.6 GHz band taking into account their holdings of spectrum in the other bands, will lead MNOs to consider what further investment they need to make to expand their network capacities and provide innovative services.

22. Having assessed the overall benefits of the Proposed Approach as compared to the alternatives of the Extension Approach and the RFR Approach as advocated by some respondents, in terms of whether they meet the multiple objectives in spectrum re-assignment, the CA considers that there are no overriding public policy reasons that would justify a deviation from the market-based approach for the re-assignment of the Available Spectrum. The CA's assessment is that there are likely to be competing demands for the Available Spectrum by the time the current term of assignment expires. Auction will ensure the optimal amount of spectrum be put into the hands of the operators which value it the most and can be expected to put it to the most efficient use. **Accordingly, the CA maintains its view to adopt the Proposed Approach to re-assign by way of auction the Available Spectrum in March 2024 upon expiry of the existing assignments.**

Band Plan

23. Currently, the 2.5/2.6 GHz band is deployed for 4G services based on the FDD mode of operation, while the 2515 – 2675 MHz band in the Mainland is deployed for 5G services based on the TDD mode of operation. The Office of the Communications Authority (“OFCA”) sought the views of the industry in 2019 on the use of the FDD or TDD mode of operation in the new assignment term of the

Available Spectrum via the Radio Spectrum and Technical Standards Advisory Committee (“SSAC”), and the four major MNOs generally considered that the FDD mode of operation should continue to be adopted in the whole 2.5/2.6 GHz band¹⁰. Therefore, the CA proposed in the Consultation Paper to maintain the paired spectrum blocks in the band plan.

24. In the submissions to the consultation, none of the respondents express preference for the TDD mode of operation. However, two incumbent assignees of the Available Spectrum and a related MNO suggest aligning the expiry date of the existing assignments of the Available Spectrum with that of the Remaining Spectrum in May 2028 (i.e. the Extension Approach mentioned in paragraph 12 above) to allow more time for the industry to consider whether to adopt the FDD or TDD mode of operation for the whole 2.5/2.6 GHz band.

25. The CA proposed in the Consultation Paper that the existing FDD mode of operation, and therefore the paired spectrum blocks in the band plan, would continue to be used in the re-assignment of the Available Spectrum after taking into account the feedback from the industry to the SSAC in 2019, and there was no objection raised by the respondents. The continued adoption of the FDD mode of operation for the time being however does not justify the use of the Extension Approach. Under the Proposed Approach, the industry would also be able to review the mode of operation for the 2.5/2.6 GHz band and reach consensus on any change, such as at the time of re-assignment of the Remaining Spectrum in May 2028 or any other appropriate time in the future.

26. Having regard to the widely recognised technical standard for 5G equipment and devices developed by the industry standardisation body 3GPP, the CA proposed in the Consultation Paper to divide the Available Spectrum into nine paired frequency blocks with a bandwidth of 2 x 5 MHz each. Such an arrangement would allow individual bidders the maximum flexibility to acquire frequency blocks in the band to form carriers of larger bandwidth subject to their technical and commercial considerations. Respondents generally support or indicate no adverse comments on the proposed band plan. Thus **the CA decides to maintain its view to divide the Available Spectrum into nine frequency blocks with a bandwidth of 2 x 5 MHz each**, as depicted in Figure 1 below.

¹⁰ Views of the industry on use of the 2.5/2.6 GHz band are summarised in the SSAC Paper No. 1/2020, which is available at:
https://www.ofca.gov.hk/filemanager/ofca/en/content_751/SSAC_Paper_1_2020.pdf.

Figure 1: Band plan for the Available Spectrum

	D1	D2	D3	Existing Assignment due to Expire in May 2028 (2 x 25 MHz)		D4	D5	D6	D7	D8	D9	
	5	5	5			5	5	5	5	5	5	
Lower band	2500	2505	2510	2515		2540	2545	2550	2555	2560	2565	2570 MHz
Upper band	2620	2625	2630	2635		2660	2665	2670	2675	2680	2685	2690 MHz

Spectrum Cap

27. Having considered the overall holdings of spectrum below 6 GHz¹¹ by the major MNOs and the expected keen demand for spectrum in the 2.5/2.6 GHz band, the CA proposed in the Consultation Paper to set a cap for each bidder at 50 MHz (i.e. 2 x 25 MHz) out of the 90 MHz of Available Spectrum in order to prevent undue concentration of spectrum in the hands of any individual MNO. This level of spectrum cap would enable MNOs currently using the Available Spectrum to acquire in the coming auction an amount of the spectrum no less than what they are currently holding. Views in the submissions to the consultation are diverse, ranging from suggestions of setting no spectrum cap at all to caps at levels which are lower or higher than the proposed level.

28. The CA considers that the setting of spectrum caps in an auction is necessary to prevent over-concentration of spectrum that may adversely affect competition in the mobile telecommunications industry. The proposed 50 MHz-cap, which allows a successful bidder to acquire up to 56% of the Available Spectrum, is regarded by some respondents as too high. However, such a cap is a minimum to ensure that any MNO will not be restrained from bidding for the amount of spectrum it currently holds in the Available Spectrum. Regarding the concern on spectrum concentration, the CA considers that having regard to the latest state of technology and the technology neutral approach to spectrum assignment, it could be addressed with an analysis taking into account the share of spectrum holdings in all the relevant frequency bands, including all the low-band and mid-band frequencies that could be deployed for the provision of public mobile services, as listed in [Table 2](#) below, as MNOs may flexibly refarm the spectrum they hold in various frequency bands in tandem with developments in mobile technologies and customer demands.

¹¹ Assessment on spectrum holdings 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.

**Table 2: 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 GBL, a joint venture between HKT and Hutchison, is divided equally between HKT and Hutchison for calculation purpose, and HKT holds another 40 MHz of spectrum in the band on its own.

29. In the above connection, even if the incumbent MNO currently holding the largest amount of spectrum acquires in total 50 MHz of the Available Spectrum, the CA observes that its share of the total spectrum available for the provision of public mobile services will only increase slightly from 30.5% to 31.0%¹², while the shares of spectrum held by the other major MNOs will be in the range of 20% – 29%. Spectrum holdings at these levels are unlikely to prevent effective competition in the mobile telecommunications market. Therefore, **the CA decides to maintain its view to impose a spectrum cap of 50 MHz on each bidder in the auction of the Available Spectrum.**

Eligible Bidders

30. Respondents in general support or express no adverse comments on the proposal to allow all interested parties to apply for participation in the auction. On the issue of connected bidders¹³, three respondents including the incumbent assignee

¹² Calculation of shares of spectrum holdings of MNOs does not include spectrum assignments in the 26 GHz and 28 GHz bands.

¹³ For spectrum auctions in Hong Kong, Company A is treated as a connected bidder with Company B if
(a) Company A holds a material interest (e.g. holding 25% or more of shares) in Company B;
(b) Company B holds a material interest in Company A; or
(c) a person holds a material interest in both Company A and Company B.

of the Available Spectrum (GBL) whose shares are jointly held by two MNOs (HKT and Hutchison) suggest that connected bidders should be allowed to participate in the auction of the Available Spectrum as long as the effective amount of spectrum acquired by an individual MNO does not exceed the spectrum cap, while an incumbent assignee of the Remaining Spectrum is of the view that connected bidders should not be allowed to participate in the auction to safeguard any bypass of the spectrum cap rule.

31. The restriction on connected bidders participating in the same spectrum auction, which the CA consistently adopted in past auctions and intends to incorporate also into the information memorandum for the auction of the Available Spectrum, has a vital role to play in upholding the integrity of the auction by preventing possible collusion among bidders. As GBL is jointly held by HKT and Hutchison, the CA is of the view that HKT and Hutchison should participate in the auction in their own right as separate entities or jointly through GBL as a single entity. However, the CA acknowledges the special circumstances in which HKT became an incumbent assignee of the Available Spectrum after a merger and acquisition transaction in 2014¹⁴. The CA notes the potential problem of business continuity which GBL will face if it is not able to acquire any of the Available Spectrum in the auction due to the connected bidder restriction. This may in turn affect GBL's provision of network services to the two MNOs engaged in the joint venture.

32. Whilst the CA considers that the connected bidder restriction will need to be maintained to uphold the integrity of the auction, it is prepared to consider the joint application of HKT and Hutchison for transfer of some of the Available Spectrum they acquired to GBL after the forthcoming auction, if HKT and Hutchison both participate in the auction and each manages to acquire a certain amount of the Available Spectrum from the auction (subject to the cap of 50 MHz for each bidder). They may submit a joint application to the CA for its approval for the transfer to GBL of all or part of the re-assigned spectrum acquired by them before the date of re-assignment. Since the sole purpose of the arrangement is to enable GBL to carry on with its existing scale and mode of operation if the concerned parties (namely GBL, HKT and Hutchison) so wish, the CA will only consider a transfer of up to 40 MHz

¹⁴ The Available Spectrum was originally assigned to GBL, CSL Limited and CMHK in March 2009 following an auction. HKT did not participate in that auction. HKT subsequently acquired CSL Limited after obtaining the prior consent from the CA in 2014 pursuant to the then merger and acquisition requirements of section 7P of the TO and became a spectrum assignee of the Available Spectrum.

of the re-assigned Available Spectrum¹⁵ that is equally contributed by HKT and Hutchison (i.e. 20 MHz or two 2 x 5 MHz blocks of the Available Spectrum by each)¹⁶. Such an arrangement is warranted under the special circumstance as illustrated above and will only be applicable to the re-assignment of the 90 MHz of Available Spectrum in the 2.5/2.6 GHz band. For the avoidance of doubt, it should not be treated generally as a precedent for other spectrum re-assignment exercises.

33. Subject to the connected bidder restriction, **the CA decides that as in all the past spectrum auctions, all interested parties may apply to participate in the auction of the Available Spectrum**, after fulfilling the following minimum 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.

Auction Format and Timing

34. The CA proposed in the Consultation Paper to adopt the SMRA auction format in the auction to be conducted for the re-assignment of the Available Spectrum. Views in the submissions to the consultation in general support or indicate no adverse comments on the adoption of the SMRA auction format if the Available Spectrum is to be re-assigned in March 2024 upon expiry of the existing assignments.

35. As explained in paragraph 22 above, the CA decides to adopt the Proposed Approach to re-assign the Available Spectrum by way of auction upon expiry of the existing assignments in March 2024. In view of the support from

¹⁵ Currently, GBL holds 30 MHz of the Available Spectrum. The allowable limit for transfer by HKT and Hutchison of the rights to hold the re-assigned spectrum is set at 40 MHz in total due to the technical constraint rendered by the paired frequency blocks of 2 x 5 MHz each and the requirement of an equal amount of transfer by the two parties in order to mimic the existing operation of GBL. If the limit for transfer is set at 20 MHz instead, the network capacity of GBL will be reduced in the new assignment period of the Available Spectrum.

¹⁶ If both HKT and Hutchison do not participate in the auction, there is no restriction for GBL to participate in it and bid for a maximum of 50 MHz according to the spectrum cap.

respondents, the CA maintains its view that the SMRA auction format will be adopted in the auction for the re-assignment of the Available Spectrum.

36. The CA has conducted a holistic assessment of all the spectrum that will be made available to the market in a similar timeframe, and of the submissions received in response to the public consultations on proposed assignment and re-assignment arrangements which took place around the same time as that of the Available Spectrum¹⁷. Having regard to the analysis set out in the respective statements issued on the same day regarding the assignment and re-assignment arrangements for the other spectrum¹⁸, **the CA decides that the Available Spectrum in the 2.5/2.6 GHz band will be put to auction together with other available spectrum (namely spectrum in the 600 MHz, 700 MHz, 850 MHz, 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 between different frequency bands during the bidding process based on their business needs and taking into account the actual bidding situation for all the available frequency blocks, thus allowing maximum flexibility for bidders to devise their bidding strategy in a holistic manner. 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

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

¹⁷ Apart from consultation on the re-assignment of the Available Spectrum, 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 in July 2020, assignment of spectrum in the 600 MHz and 700 MHz bands and re-assignment of spectrum in the 850 MHz band and the related SUF in August 2020, which are available at: https://www.coms-auth.hk/filemanager/en/content_711/cp20200722.pdf, https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_1.pdf and https://www.coms-auth.hk/filemanager/en/content_711/cp20200819_2.pdf.

¹⁸ Statements on the arrangements for assignment of additional spectrum in the 4.9 GHz band, assignment of spectrum in the 600 MHz and 700 MHz bands, and re-assignment of spectrum in the 850 MHz band and the related SUF are available at: https://www.coms-auth.hk/filemanager/statement/en/upload/555/4_9_ghz_statement.pdf, https://www.coms-auth.hk/filemanager/statement/en/upload/558/600_700_mhz_statement.pdf and https://www.coms-auth.hk/filemanager/statement/en/upload/557/850_mhz_statement.pdf.

Licensing and Validity Period

38. 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 Available Spectrum will each be granted a new 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 31 March 2024 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 for combining their existing UCLs with the new UCL to be issued.

Technology Neutrality

39. The Available Spectrum will be re-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. However, to avoid causing any harmful interference among spectrum assignees in the 2.5/2.6 GHz band, the use of the Available Spectrum should be in line with the band plan mentioned in paragraph 26 above, which is based on the FDD mode of operation stipulated in the 3GPP standards¹⁹. The CA with support of OFCA will keep a close dialogue with the industry on the review of the mode of operation in the 2.5/2.6 GHz band in the future.

Restriction on Frequency Swap

40. The proposal of restricting successful bidders to swap their assigned frequency blocks within the Available Spectrum from the commencement of the new assignment term in March 2024 until the re-assignment of the Remaining Spectrum in May 2028 is supported by two respondents while two other respondents disagree

¹⁹ Provided that consensus can be reached among all MNOs operating in the 2.5/2.6 GHz band, a possible change to the TDD mode of operation for enhancing spectral efficiency may be considered by the CA at or after the re-assignment of the Remaining Spectrum in May 2028 as discussed in paragraphs 40 – 41 below.

with it on the ground that higher spectral efficiency would be promoted if frequency swaps are allowed.

41. The CA considers that the restriction on frequency swapping within the first few years of spectrum re-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, given that only nine blocks of the Available Spectrum will be available for bidding, the SMRA auction format provides an opportunity for individual bidders to acquire contiguous blocks. Therefore, **the CA decides to maintain its position that frequency swapping from the commencement of the new assignment term of the Available Spectrum in March 2024 until the re-assignment of the Remaining Spectrum in May 2028 will generally not be considered.** Following the re-assignment of all the spectrum in the 2.5/2.6 GHz band, the CA may consider any proposal of frequency swapping from MNOs provided that there are sound justifications such as enhancing spectral efficiency say by making a change in FDD mode of operation to TDD.

Network and Service Rollout Obligations

42. 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 provide a minimum coverage of 90% of population within the first five years from the date of re-assignment of the Available Spectrum. Respondents to the consultation in general express no adverse comments on imposition of such an obligation, except two respondents who consider it not necessary to impose any network and service rollout obligations as a matter of principle. If a network and service rollout obligation is deemed necessary, they suggest lowering the minimum population coverage requirement from 90% to 50%, which is the network and service coverage requirement when the Available Spectrum was first assigned in March 2009.

43. In view of the fact that the Available Spectrum has been fully deployed by the MNOs for the provision of 4G services, currently the most popular generation of mobile services, it is likely that their mobile networks should have met, if not exceeded, the 90% minimum population coverage requirement. The CA considers that it is necessary to keep the requirement on the minimum population coverage at a high level for re-assigned spectrum which is fully deployed for service provision, in order to ensure the same efficient use of the spectrum at present and this would in turn

help maintain the quality of service experienced by consumers. It is also relevant to note that the Available Spectrum has good radio propagation characteristics, which enables the provision of broad geographical coverage in an economical manner. Given the densely populated environment in Hong Kong, it is reasonable to require assignees of the Available Spectrum to roll out their networks and services using the assigned spectrum as a scarce public resource to provide a minimum population coverage of 90% within the first five years from the date of spectrum re-assignment.

44. Based on the above considerations, **the CA decides to maintain its view to require each successful bidder of the Available Spectrum to provide a minimum coverage of 90% of the population of Hong Kong by using the assigned spectrum within the first five years from the date of spectrum re-assignment.**

Performance Bond for Rollout Obligations

45. The CA proposed in the Consultation Paper that each successful bidder of the Available Spectrum would be required to lodge a performance bond for guaranteeing its compliance with the aforesaid network and service rollout obligations. If any of the nine frequency blocks of the Available Spectrum is acquired by an incumbent assignee, the assignee may choose to provide network coverage figures demonstrating that its network operating with the re-assigned spectrum has already fulfilled the 90% minimum population coverage requirement, without the need to provide a performance bond for that frequency block. While most of the respondents support or have no adverse comments on the CA's proposal, one of the respondents seeks clarification on whether the performance bond requirement would be waived if an incumbent MNO is re-assigned any of the nine frequency blocks of the Available Spectrum (i.e. not the exact bandwidth or location it previously held) and is able to provide network coverage figures demonstrating fulfilment of the minimum population coverage requirement.

46. As all the spectrum in the 2.5/2.6 GHz band has been extensively deployed for the provision of public mobile services and all the incumbent assignees of the Available Spectrum also hold some of the Remaining Spectrum, their mobile networks operating in the 2.5/2.6 GHz band can be readily used to deploy any frequency blocks acquired within the Available Spectrum with the same level of coverage after some reconfiguration. On this basis, the requirement to lodge a performance bond guaranteeing compliance with the network and service rollout obligations can be waived if the incumbent assignees of the Available Spectrum are

re-assigned any of the frequency blocks of the Available Spectrum even if they differ from the frequency blocks currently held by them, subject to the provision of network coverage figures demonstrating 90% minimum population coverage as detailed in the previous paragraph. Similarly, the performance bond requirement can also be waived if the incumbent assignees of the Remaining Spectrum are assigned any of the frequency blocks of the Available Spectrum and they provide network coverage figures to demonstrate the 90% minimum population coverage.

47. Based on the above considerations, **the CA maintains its view to require each successful bidder of the Available Spectrum to lodge a performance bond for guaranteeing its compliance with the network and service rollout obligations** as set out in paragraph 44 above. **The CA further decides that if an incumbent assignee of the Available Spectrum and/or the Remaining Spectrum successfully acquires any of the nine frequency blocks of the Available Spectrum, it may choose to provide network coverage figures demonstrating that its existing network operating in the 2.5/2.6 GHz band has already fulfilled the 90% minimum population requirement, without the need to provide a performance bond.** The CA will specify the details of the performance bond requirements in the information memorandum to be issued for the auction of the Available Spectrum.

THE DECISION OF SCED ON THE RELATED SPECTRUM UTILISATION FEE

Level of SUF

48. 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.

49. In paragraphs 10 and 22 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 re-assignment of the Available Spectrum. 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 Available Spectrum will be determined by auction in accordance with section 32I(2) of the TO, subject to an auction reserve price to be specified nearer the time of the auction.

50. 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 price at a high level which might discourage competition and bidders' eagerness to participate in the auction. Rather, SCED considers that it should be set at a level that represents 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 the MNOs' views received from the consultation that the auction reserve price should not be set at a high level.

Method of Payment

51. 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.

52. 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

53. The CA and SCED will make the necessary arrangements to enable the re-assignment of the Available Spectrum to proceed as per their respective decisions promulgated in this Statement. 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 Available Spectrum in the 2.5/2.6 GHz band in the fourth quarter of 2021.

54. 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

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

INTRODUCTION

On 23 September 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 re-assignment of 90 MHz of spectrum in the frequency ranges of 2500 – 2515 MHz paired with 2620 – 2635 MHz and 2540 – 2570 MHz paired with 2660 – 2690 MHz (hereafter referred to as “Available Spectrum”) within the 2.5/2.6 GHz band upon expiry of the existing assignments on 30 March 2024 and the related spectrum utilisation fee (“SUF”) (“Consultation Paper”)¹.

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

Mobile Network Operators (“MNOs”)

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

Other Commercial Firm

- (f) Comba Telecom Limited (“Comba”)

Individual

- (g) Simon Lo

¹ The Consultation Paper is available at:
https://www.coms-auth.hk/filemanager/en/content_711/cp20200923.pdf.

² Submissions to the Consultation Paper are available at:
https://www.coms-auth.hk/en/policies_regulations/consultations/completed/tele_services/index_id_2264.html.

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 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 RE-ASSIGNMENT APPROACH

Re-assignment of Available Spectrum by Auction

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

Views and Comments of the Respondents

5. SmarTone and Comba support the proposal to re-assign the Available Spectrum by way of auction upon expiry of the existing assignments in March 2024 (i.e. the Proposed Approach). The remaining five respondents, viz. CMHK, GBL, HKT, Hutchison and the individual respondent suggest that the CA should consider an administrative extension of the existing assignments of the Available Spectrum by four years and two months (i.e. the Extension Approach) to align with the expiry date of the assignments of the other 50 MHz of spectrum in the 2.5/2.6 GHz band in May 2028 (“Remaining Spectrum”), with a view to making available a contiguous band of 140 MHz of spectrum for re-assignments in a single auction and avoiding fragmentation of spectrum for more efficient use of it. If the Available Spectrum is to be re-assigned in 2024, GBL, HKT and Hutchison suggest a right of first refusal be offered to the incumbent MNOs (i.e. the RFR Approach) in order to ensure service continuity. GBL and Hutchison consider that the assumption that the deployment of 5G services will result in a significant portion of the current 4G traffic being offloaded

to the 5G spectrum bands is not necessarily accurate and point out that it takes time to migrate from one generation of mobile services to another.

Responses of the CA

6. The CA sets out its considerations in paragraphs 8 – 10 of the Statement that there are likely to be competing demands for the spectrum in the 2.5/2.6 GHz band. In accordance with the guiding principle for spectrum management as set out in the Radio Spectrum Policy Framework (“Spectrum Policy Framework”)³ promulgated by the Government in April 2007, a market-based approach should be adopted for the re-assignment of the spectrum unless there are overriding public policy reasons to do otherwise. The Proposed Approach, by re-assigning the Available Spectrum by way of auction in 2024, will ensure continuity of customer services, as elaborated in paragraphs 15 – 17 of the Statement. The Available Spectrum to be re-assigned in March 2024 only accounts for a small part of the total amount of spectrum used for the provision of public mobile services. In the event that an incumbent assignee fails to acquire any of the Available Spectrum from auction, it can still use the Remaining Spectrum along with spectrum in the other frequency bands to provide 4G services to its existing customers. The concern about spectrum fragmentation has been addressed in paragraph 18 of the Statement.

7. On the issue of customer migration from 4G to 5G services and the offloading of 4G traffic to the 5G network, given that the Available Spectrum will be actually re-assigned three years later in March 2024, we expect to see increasing customer migration from 4G to 5G during the period, and any impact on the provision of 4G services due to the re-assignment of the Available Spectrum would be alleviated with the increasing take-up of 5G services by customers. Furthermore, the incumbent assignees of the Available Spectrum have currently deployed a total of about 700 MHz of spectrum for the provision of mobile broadband services based on 4G and 5G technologies, out of which the Available Spectrum accounts for only 13%. From the angle of spectrum resources, the CA does not see that there is any issue of continuity of the concerned mobile services due to re-assignment of the Available Spectrum by way of auction.

8. The CA has assessed the overall benefits of the Proposed Approach as compared to the alternatives of the Extension Approach and the RFR Approach in

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

terms of whether they meet the multiple objectives in spectrum re-assignment as elaborated in paragraphs 14 – 21 of the Statement, and is of the view that there are no overriding public policy reasons justifying deviation from a market-based approach in the re-assignment of the Available Spectrum.

PROPOSED RE-ASSIGNMENT ARRANGEMENTS

Band Plan

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

Views and Comments of the Respondents

9. Six out of seven respondents to the consultation either support or express no adverse comments on the proposed band plan. Only Comba proposes to set the minimum size of the paired frequency blocks at 2 x 10 MHz each and to allow one frequency block of 2 x 15 MHz at the lower frequency edges of the Available Spectrum. Some respondents, including GBL, HKT and Hutchison opine that by aligning the expiry dates of the existing assignments of the Available Spectrum and the Remaining Spectrum, the industry will be given more time to consider whether the Frequency Division Duplex (“FDD”) or Time Division Duplex (“TDD”) mode of operation should be adopted in the whole 2.5/2.6 GHz band. Any change in the mode of operation in the 2.5/2.6 GHz band will lead to changes in the band plan. GBL, HKT and Hutchison also consider that, unless the Extension Approach is adopted, the existing FDD mode of operation should be used.

Responses of the CA

10. The CA’s proposal of dividing the Available Spectrum into nine frequency blocks of 2 x 5 MHz provides the maximum flexibility for bidders to acquire their desired number of frequency blocks to form contiguous frequencies subject to their technical and commercial considerations. Having regard to the technical specifications of equipment operating in the 2.5/2.6 GHz band and the wide support from the respondents if the Proposed Approach is adopted for the

re-assignment of the Available Spectrum, the CA maintains its view to divide the Available Spectrum into nine frequency blocks with a bandwidth of 2 x 5 MHz each.

11. The CA notes the views of some of the respondents on the need to allow more time for the industry to observe market developments in the use of the TDD mode of operation in the 2.5/2.6 GHz band. The continued adoption of the FDD mode of operation for the time being however does not justify the use of the Extension Approach. The CA would also point out that, under the Proposed Approach, the industry would also be able to review the mode of operation for the 2.5/2.6 GHz band and reach consensus on any change such as at the time of re-assignment of the Remaining Spectrum in May 2028 or any other appropriate time in the future.

Spectrum Cap

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

Views and Comments of the Respondents

12. Comba and GBL support or do not object to the proposed cap of 2 x 25 MHz. While Hutchison and SmarTone suggest setting a lower spectrum cap at 2 x 20 MHz and 2 x 15 MHz respectively, CMHK proposes a higher spectrum cap of 2 x 30 MHz. HKT does not in principle support the imposition of any spectrum cap, unless there is a clearly identified competition concern. HKT and GBL further consider that, if a spectrum cap is imposed, it should be applied to the effective amount of spectrum acquired by each bidder (including connected bidders).

Responses of the CA

13. As explained in paragraphs 27 – 28 of the Statement, taking into account the overall spectrum holdings in various frequency bands below 6 GHz of the incumbent MNOs and the expected keen demand for spectrum in the 2.5/2.6 GHz band, there is a need to set a spectrum cap on each bidder's acquisition of the Available Spectrum to prevent over-concentration of spectrum in the hands of any individual MNO which may adversely affect competition in the mobile telecommunications market. Taking into account the diverse views received in the submissions to the consultation on the level of the spectrum cap, the CA considers it appropriate to

maintain its proposal to impose a spectrum cap of 50 MHz (i.e. 2 x 25 MHz) on each bidder in the auction for the re-assignment of the Available Spectrum.

Eligible bidders

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?*

Views and Comments of the Respondents

14. Respondents in general support or express no adverse comments on the proposal of allowing all interested parties to apply for participation in the auction, except Comba which is of the view that since the amount of the Available Spectrum will not be sufficient to enable a new entrant to deploy a whole new mobile network economically, the auction should be open only to the incumbent MNOs. HKT and GBL add that the CA should impose more stringent requirements on new entrants. On the issue of connected bidders, GBL, HKT and Hutchison consider that participation of connected bidders in the same auction should be allowed as long as the effective amount of spectrum acquired by the connected bidders (i.e. spectrum acquired by HKT and Hutchison individually plus 50% for each from GBL) does not exceed the spectrum cap. SmarTone, on the other hand, opines that connected bidders should not be allowed to participate in the auction to safeguard any bypass of the spectrum cap rule.

Responses of the CA

15. Assignment of spectrum by way of auction ensures the spectrum will go into the hands of those who value it the most and hence can be expected to make the most efficient use of it. It is not appropriate to confine participation in the auction to the incumbent MNOs as it would not be conducive to the objective of promoting efficient use of the spectrum and effective competition in the market.

16. On the issue of connected bidders, as explained in paragraph 31 of the Statement, it is important to maintain the existing rule prohibiting connected bidders from participation in the same spectrum auction to uphold the integrity of the auction. As such, GBL, HKT and Hutchison will not be allowed to participate together in the auction for the re-assignment of the Available Spectrum. However, the CA notes the special circumstances of these parties with regard to the Available Spectrum, and has

set out the arrangement as elaborated in paragraph 32 of the Statement to enable GBL to carry on with its existing scale and mode operation if the concerned parties so wish.

17. In view of the above, the CA maintains that all interested parties, including the incumbent assignees and new entrants (if any), may apply for participation in the auction, subject to the connected bidder restriction and applicants meeting the minimal qualification requirements for registering bidders' interest and demonstrating their capability to provide satisfactory service. The market-based approach of auction ensures that any party who may make efficient use of the spectrum may participate in the auction with minimal regulatory restriction.

Auction Format

Question 5: *Do you have any views on the adoption of the simultaneous multiple-round ascending auction ("SMRA") auction format for the re-assignment of the Available Spectrum?*

Views and Comments of the Respondents

18. Respondents either support or express no adverse comments on the adoption of the SMRA auction format for the re-assignment of the Available Spectrum in 2024. GBL, HKT and Hutchison opine that the clock auction format will be preferred if the Available Spectrum and the Remaining Spectrum are put together in a single auction for re-assignment in 2028.

Responses of the CA

19. As explained in paragraph 22 of the Statement, the CA has decided to re-assign the Available Spectrum by way of auction upon expiry of the existing assignments in March 2024. It is not necessary to consider the auction format proposed for the other timeframe.

20. The general support from respondents of the SMRA auction format for re-assignment of the Available Spectrum in 2024 is noted. As explained in paragraph 36 of the Statement, the Available Spectrum in the 2.5/2.6 GHz band will be put to auction together with other available spectrum (namely spectrum in the 600 MHz, 700 MHz, 850 MHz, and 4.9 GHz bands) under a single auction in the SMRA format. Such an arrangement will allow a holistic bidding strategy for bidders

in their acquisition of spectrum in different frequency bands from the auction to be conducted in the fourth quarter of 2021.

LICENSING ARRANGEMENTS

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

Network and Service Rollout Obligations

Views and Comments of the Respondents

21. CMHK, Hutchison and SmarTone agree or do not object to the network and service rollout obligations as proposed in the Consultation Paper. GBL and HKT in principle do not consider it necessary to impose any network and service rollout obligations. They opine that the minimum population coverage requirement should be kept at the original level which applied when the Available Spectrum was first assigned in March 2009 (i.e. 50%) if the CA is minded to impose any network and service rollout obligations. They also disagree with the restriction on frequency swaps until the Remaining Spectrum is re-assigned, as it would otherwise enable operators to make more efficient use of the Available Spectrum.

Responses of the CA

22. To ensure efficient use of the Available Spectrum and no degradation of customer services in the new spectrum assignment term, the CA maintains its view that network and service rollout obligations should be imposed on the successful bidders of the spectrum. The reasons why the minimum level of population coverage to be attained within the first five years of spectrum assignment is set at 90% have been explained in paragraph 43 of the Statement. This is not the first time that a 90% minimum population coverage requirement has been imposed by the CA. The same network and service rollout obligations have been imposed for the re-assignment of

the spectrum in the 900 MHz and 1800 MHz bands⁴ and the forthcoming assignment of the newly available spectrum in the 600 MHz and 700 MHz bands⁵. Although the Available Spectrum is at a higher frequency band than the above four frequency bands, it has already been fully utilised for extensive network deployment by the MNOs and its good radio propagation characteristics enable the provision of wide area coverage in an economically efficient manner. On the concern about restriction on frequency swap limiting efficient use of the spectrum, please see paragraph 41 of the Statement.

Performance Bond for Rollout Obligations

Views and Comments of the Respondents

23. CMHK and SmarTone support the CA's proposal that incumbent spectrum assignees who are re-assigned any of the nine frequency block of the Available Spectrum may choose to provide network coverage figures demonstrating their compliance with the network and service rollout obligations, without the need to provide a performance bond for that frequency block. Hutchison seeks clarification on whether the performance bond requirement would be waived if an incumbent MNO is re-assigned any of the nine frequency blocks (i.e. not the exact bandwidth or location it previously held) and is able to provide network coverage figures demonstrating fulfilment of the minimum population coverage requirement. It also proposes that similar to the option as proposed in the consultation on arrangements for assignment of additional spectrum in the 4.9 GHz band, incumbent assignees of the 2.5/2.6 GHz band should be allowed to provide an undertaking in lieu of a performance bond for guaranteeing its compliance with the network and service rollout obligations.

Responses of the CA

24. In principle, each successful bidder of spectrum will be required to submit a performance bond to guarantee its compliance with the network and service rollout obligations. As explained in paragraphs 46 – 47 of the Statement, if an

⁴ See paragraph 100 of the Statement of the CA and SCED on arrangements for the frequency spectrum in the 900 MHz and 1800 MHz bands upon expiry of the existing assignments for public mobile services and the related spectrum utilisation fee issued in December 2017, which is available at: https://www.coms-auth.hk/filemanager/statement/en/upload/429/ca_statements20171219_en.pdf.

⁵ See paragraph 32 of the Statement of the CA and SCED on arrangements for assignment of spectrum in the 600 MHz and 700 MHz bands for the provision of public mobile services and the related spectrum utilisation fee issued on the same day together with this Statement, which is available at: https://www.coms-auth.hk/filemanager/statement/en/upload/558/600_700_mhz_statement.pdf.

incumbent assignee of the Available Spectrum and/or the Remaining Spectrum successfully acquires any of the nine frequency blocks of the Available Spectrum, it may choose to provide network coverage figures demonstrating that its existing network operating in the 2.5/2.6 GHz band has already fulfilled the 90% minimum population requirement, without the need to provide a performance bond.

25. On the proposal of providing an undertaking in lieu of a performance bond for guaranteeing compliance, as was also proposed for the assignment of additional spectrum in the 4.9 GHz band, it has to be pointed out that each of the existing assignees of the 4.9 GHz band has already lodged a performance bond with the CA to guarantee rollout of a new mobile network deploying the 4.9 GHz band and the same mobile network can be readily used to deploy additional spectrum in the same band. This, however, is not the case for existing assignees of the 2.5/2.6 GHz band. The performance bonds provided by them following the two rounds of relevant spectrum assignment in 2009 and 2013 respectively have been returned to them years ago upon fulfilment by them of the network and service rollout obligations. It is thus more appropriate for incumbent assignees of the 2.5/2.6 GHz to provide network coverage figures to demonstrate fulfilment of the coverage requirement.

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 35 and 36 of the Consultation Paper?*

Views and Comments of the Respondents

26. 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 and Hutchison propose 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 annual instalment payment. HKT suggests that the pre-set fixed percentage applied to SUF instalment should be reduced.

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

Responses of SCED

28. 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 annual instalment payment, 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 pre-set fixed percentage increment 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%.

29. 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