
Hutchison Telephone Company Limited

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

Date: 13 October 2020





I. Executive Summary

1. Hutchison Telephone Company Limited (“**Hutchison**”) makes this submission in response to the consultation paper entitled “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” (the “**Consultation Paper**”) jointly issued by the Communications Authority (the “**CA**”) and the Secretary for Commerce and Economic Development (the “**SCED**”) on 19 August 2020.
2. Hutchison welcomes the Government¹’s proposal to make available a total of 140 MHz of spectrum within the frequency range of 614 – 806 MHz, i.e. 2 x 35 MHz of spectrum in the ranges of 703 – 738 MHz paired with 758 – 793 MHz (the “**700 MHz Band**”) and 2 x 35 MHz of spectrum in the ranges of 617 – 652 MHz paired with 663 – 698 MHz (the “**600 MHz Band**”), for the provision of public mobile services including 5G services in Hong Kong.
3. However, we have some concerns about the long-term overall spectrum planning for these frequency ranges. On the publication day of the Consultation Paper, the Government issued another consultation paper on the assignment of the spectrum in the 850 MHz band (the “**850 MHz Band**”). It would be desirable if the CA takes a more holistic approach to long-term spectrum planning of the aforesaid frequency bands, so as to achieve optimal spectral efficiency for the benefits of the telecommunications industry and the public of Hong Kong as a whole.
4. Given the lack of ecosystem and the restrictive deployment (indoor only) for the 600 MHz Band, we are of the view that it’s not the right time for assignment. If the Government is minded to make it available for deployment by the mobile network operators (“**MNOs**”)² at the same time as the 700 MHz Band, the allocation should be made by way of administrative assignment instead of by auction.
5. More spectrum in the 700 MHz Band should be made available. Given the limited amount of the spectrum in this band, it is appropriate to set a spectrum cap at 20 MHz, in order to prevent any bidder from acquiring more than 30 MHz, or 43%, of the spectrum, thereby maintaining a level playing field, multi-players environment and healthy competitions in the Hong Kong telecommunications market.
6. In view of the similarity in the propagation characteristics between the 700 MHz Band and the 850 MHz Band, the auction for these two bands should be conducted together in the form of the simultaneous multiple-round ascending auction, i.e. the same format as the auction held in 2018 for the 900 MHz and 1800 MHz bands.

¹ The CA and the SCED are collectively referred to as “the **Government**” in this paper.

² Currently, there are four MNOs in Hong Kong, namely China Mobile Hong Kong Company Limited (“**CMHK**”), Hong Kong Telecommunications (HKT) Limited (“**HKT**”), Hutchison Telephone Company Limited (“**Hutchison**”) and SmarTone Mobile Communications Limited (“**SmarTone**”).



II. Response to the Specific Questions in the Consultation Paper

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

7. Hutchison welcomes the Government's proposal to vacate the 614 – 806 MHz band after analogue switch off and re-allocate it for the high value-added public mobile telecommunications services.

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?

600 MHz Band

8. Regarding the spectrum in the 600 MHz Band, we welcome the proposed changes of frequency re-allocation from the broadcast services to the public mobile telecommunication services as expressed above. However, we opine that it's premature to assign this frequency band by way of auction given its limited ecosystem and restrictive use as currently proposed by the Government.
9. Upon review of the global demand and usage, the Government is aware that the 600 MHz band has been assigned for public mobile use only in the United States, and other economies such as Canada and Mexico have identified or may identify the band or parts of it for the provision of public mobile services³. This indicates that the ecosystem is only in the making with development mainly in the North America, but not other parts of the world.
10. As the Mainland will continue to use the 600 MHz band for broadcasting services, the Government proposes to deploy the band in Hong Kong for indoor use only (serving as indoor mobile hotspots), in order to avoid mutual interference with the Mainland's broadcasting services.
11. Hutchison has conducted research with equipment vendors and found that most of them including one major equipment vendor which provides telecommunication

³ Paragraph 15 of the Consultation Paper.



equipment and facilities to three MNOs in Hong Kong has yet announced the availability of the 600 MHz Band equipment. This founding is far from the Government's expectation that “**5G equipment** and devices operating in the **600/700 MHz bands** will become more **commonly available in the market from 2021 onwards...**”⁴ [emphasis added]

12. Global harmonization is critical to the success of 5G. It is stated in a leading equipment vendor's policy paper that:

“The global availability of harmonized regulatory frameworks for 5G spectrum will enable economies of scale, and facilitate cross-border coordination and roaming for end users. Consistent spectrum release timelines and harmonization measures are key enablers for the success of 5G.”⁵

13. To achieve spectral efficiency and territory-wide deployment, we urge the Government to further coordinate with the Mainland authorities to harmonize the 600 MHz Band, so that the band could be opened up for outdoor use to enhance overall 5G coverage as well as network capacity.
14. Given the lack of ecosystem and the restrictive deployment (indoor only) of the 600 MHz Band at this stage, we are of the view that it's not the right time for assignment. If the Government is minded to make it available for deployment by the MNOs at the same time as the 700 MHz Band, the allocation should be made by way of administrative assignment instead of by auction.
15. Indeed, it is critical for the CA to take a holistic approach to long-term spectrum planning for Hong Kong. In order to achieve optimal spectral efficiency, the regulator needs to take bold steps and make changes. It takes determination as well. In this respect, Hutchison has studied the overall spectrum infrastructure in Hong Kong (specifically the 600 MHz Band, 700 MHz Band and 850 MHz Band) and come up with some suggestions. Our proposed spectrum plans and re-allocation would, we believe, lead to optimal spectral efficiency with an additional bandwidth of 35 MHz available for mobile deployment. Please refer to the tables at Annex I and Annex II for details.

700 MHz Band

16. Regarding the 700 MHz Band, we urge the Government to conduct a more thorough study and make more spectrum available in this band for mobile deployment.
17. Upon review of the band plan for the 700 MHz Band, we have identified at least 2 x

⁴ Paragraph 14 of the Consultation Paper.

⁵ “5G Spectrum Policy Paper”, Huawei, February 2020.



10 MHz bandwidth (in the frequency ranges of 738 – 748 MHz paired with 793 – 803 MHz) for assignment to maximize the available spectrum for 5G deployment. With this additional 20 MHz, the total spectrum available for auction would become 2 x 45 MHz (instead of 2 x 35 MHz), which is in line with the technical standards set by the industry standardization body 3rd Generation Partnership Project (“3GPP”).

18. In view of the similarity in the propagation characteristics between the 700 MHz Band and the 850 MHz Band, the auction for these two bands should be conducted together in the form of the simultaneous multiple-round ascending (“SMRA”) auction, i.e. the same format as the auction held in 2018 for the 900 MHz and 1800 MHz bands.
19. For the assignment approach, we consider that priority should be given to the incumbent MNOs due to the facts that low bands generally associate with mid-bands and high bands under a heterogeneous network (HetNet), where incumbent MNOs could offer a scenario with enhanced connectivity and density vis-à-vis newcomers only with green field deployment.

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

20. As the per-block bandwidth of 2 x 5 MHz complies with the 3GPP technical standards, we consider that the proposal is reasonable. If more spectrum could be made available in the 700 MHz Band, then the frequency blocks will be more than seven in total.

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

21. According to the Government, the purpose of setting a spectrum cap for each bidder at 30 MHz (2 x 15 MHz) is to “prevent over-concentration of spectrum holding in the hands of any individual MNO.”⁶ Admittedly, it acknowledges that a successful bidder of the spectrum in the 600/700 MHz bands will acquire as much as a total of 60 MHz or 43% of the spectrum in the bands.

⁶ Paragraph 21 of the Consultation Paper.



22. This figure is alarming, considering that the total spectrum in the 700 MHz Band available for auction is only 70 MHz. By setting a high spectrum cap, the Government effectively allows and facilitates deep-pockets investors to dominate the 5G mobile markets, which is detrimental to the telecommunications industry and consumer interests in Hong Kong. Non-dominating MNOs may risk being squeezed out of the Hong Kong market, which would ultimately leave consumers with less choices for diversified and innovative services.
23. Given the limited amount of the spectrum in the 700 MHz Band, it is appropriate to set a spectrum cap at 20 MHz (2 x 10 MHz), so as to prevent any bidder from acquiring more than 43% of the spectrum, thereby maintaining a level playing field, multi-players environment and healthy competitions in the Hong Kong telecommunications market.

Question 5: Do you have any views on the adoption of the SMRA auction format for the assignment of the spectrum in the 600/700 MHz bands?

24. We have no adverse comments on the adoption of the SMRA auction format for the 700 MHz Band auction.

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?

25. In respect of the spectrum in the 600 MHz Band, the Government proposes to require each successful bidder to establish at least 400 indoor base stations with use of the assigned spectrum within the first five years from the date of spectrum assignment. We consider that it is difficult to fulfil such obligations.
26. As explained under Paragraphs 8 – 14 above, it is not the appropriate time for assignment of this band due to the lack of ecosystem and the restrictive deployment (indoor only). Yet, if the Government is minded to proceed with the assignment in any event, then it should relax the roll-out obligations given the uncertainties of the supply of the infrastructure and user equipment, as well as the time it would take to upgrade legacy indoor antenna distribution network.
27. As to the network and service roll-out obligations concerning the spectrum in the 700 MHz Band, we have no adverse comments.



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 above?

28. We are of the view that the reserve price should be set at a minimal level. Letting the market decide on its appropriate price level is in line with the market-based approach adopted by the CA. Reference should be made to the 5G auctions for the spectrum in the 3.3 GHz, 3.5 GHz and 4.9 GHz bands where the reserve prices have been set in the range of HK\$2 million per MHz to HK\$ 4 million per MHz.
29. Studies have shown that extracting too high a price for SUF would be counterproductive, resulting in reduced investment and higher consumer prices. In a paper published by GMSA entitled “5G Spectrum – GSMA Public Policy Position”, it reminds the authorities that:
- “Governments and regulators should avoid inflating 5G spectrum prices as this risks limiting network investment and driving up the cost of services. This includes excessive reserve prices or annual fees, limiting spectrum supply (e.g. set asides), excessive obligations and poor auction design.”⁷
30. For the payment methods, we support the proposition that spectrum assignees should be given an option to pay the SUF either by lump sum payment upfront or by annual instalments.

~ THE END ~

⁷ “5G Spectrum – GSMA Public Policy Position”, P.2, March 2020.



Annex I

Table 1: The CA's Proposed Frequency Allocation

Frequency Band	600 MHz	700 MHz	<u>850 MHz</u>	900 MHz	Total
Frequency Range	617-652 / 663-698 MHz	703-738 / 758-793 MHz	825-837.5 / 870-882.5 MHz	885-915 / 930-960 MHz	
Bandwidth	70 MHz	70 MHz	25 MHz	60 MHz	225 MHz

Table 2: Hutchison's Proposed Long-term Spectrum Plans

Frequency Band	600 MHz	700 MHz	<u>800 MHz</u>	900 MHz	Total
Frequency Range	617-652 / 663-698 MHz	703-733 / 758-788 MHz	791-821 / 832-862 MHz	880-915 / 925-960 MHz	
Bandwidth	70 MHz	60 MHz	60 MHz	70 MHz	260 MHz

Remarks:

For the long-term benefits to the mobile industry in Hong Kong, we propose the Government to take the following actions:

- (a) replace 850 MHz band by the popular 800 MHz band;
- (b) remove the strong interference from 850 MHz DL to 900 MHz UL (only 2.5 MHz gap in between); and
- (c) increase the total sub-1 GHz bandwidth from 225 MHz to 260 MHz (i.e. an increase of 15%).

For each frequency band, the proposed arrangements are as follows:

1. 700 MHz: revise the frequency allocation by reducing 10 MHz bandwidth.
2. 800 MHz: add the frequency allocation by increasing 60 MHz bandwidth.
3. 850 MHz: align the re-assignment period with another spectrum in the 850 MHz band which is due to expire in May 2026, and then phase out the 850 MHz band allocation in Hong Kong thereafter by reducing 25 MHz bandwidth.
4. 900 MHz : revise the frequency allocation by increasing 10 MHz bandwidth.



Annex II

Table 3: The CA's Proposed Frequency Allocation

617	652	663	698	703	738	758	793	825	837.5	870	882.5	885	915	930	960
35		35		35		35		7.5 5		7.5 5		30		30	
600M DL		600M UL		700M UL		700M DL		850M UL		850M DL		900M UL		900M DL	

Table 4: Hutchison's Proposed Long-term Spectrum Plans

617	652	663	698	703	733	758	788	791	821	832	862	880	915	925	960
35		35		30		30		30		30		35		35	
600M DL		600M UL		700M UL		700M DL		800M DL		800M UL		900M UL		900M DL	