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**CONSULTATION PAPER ISSUED BY**

**THE INFO-COMMUNICATIONS MEDIA DEVELOPMENT  
AUTHORITY**

**ON**

**NEXT WAVE OF 5G GROWTH & DEPLOYMENT IN  
SINGAPORE: POLICY ISSUES & PROPOSED REGULATORY  
DESIGN FOR 2.1 GHZ BAND**

**Submission by StarHub Mobile Pte Ltd to the  
Infocomm Media Development Authority**

**23 August 2021**

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## Introduction:

1. StarHub Mobile Pte Ltd (“**StarHub**”) thanks the Info-comm Media Development Authority of Singapore (the “**Authority**”) for the opportunity to comment on: (1) its proposals to support the next wave of 5G growth for all mobile network operators (“**MNOs**”) in Singapore; and (2) its proposed re-allocation framework for the 2.1 GHz band. We sincerely appreciate the thought and effort that has gone into the Authority’s consultation paper.

2. We firmly agree that re-allocating the 2.1 GHz for 5G is the right step to enhance the telecommunications networks in Singapore, broaden the ability of MNOs to provide 5G, and facilitate improvements in 5G services to the benefit of customers. We also agree that reserving a small range of the 2.1 GHz band for 3G deployments is necessary given the ongoing operation of 3G services.

3. However, it is crucially important to craft the auction rules for the 2.1 GHz band carefully, given the limited amount of spectrum available, and the number of eligible participants for the auction. In particular, the auction rules must result in efficient outcomes, incentivise parties to act rationally, and deny parties the ability to bid frivolously with the sole intention of driving-up spectrum prices for their competitors.

4. StarHub’s detailed responses to the Authority’s proposals are attached below. We appreciate the Authority’s consideration of our comments, and look forward to the Authority’s finalised auction rules.

## StarHub's Response to the Authority's Proposals:

### Policy Issues for 2.1 GHz band:

#### Primary use of the 2.1 GHz band:

5. StarHub agrees with the Authority's proposal that the primary use of the 2.1 GHz band should be for 5G standalone ("SA") services. This proposal makes best use of the scarce spectrum resources. However, the deployment of 5G SA will need time, and some MNOs today are already deploying 5G non-standalone ("NSA") services in the 2.1 GHz band on a trial basis. We respectfully submit that there needs to be greater certainty on the Authority's willingness to continue allowing such 5G NSA deployments to continue (particularly before the current rights expire).

6. In this regard, we note that the completion of the re-allocation exercise for the 2.1 GHz band is likely to be very close to (or even after) the existing expiry date of the spectrum. We respectfully submit that MNOs currently offering 5G NSA trials in the 2.1 GHz band should be allowed short term (e.g., 6-months) extensions of their existing trials to prevent unnecessary disruptions to their trial users. This will then allow the MNOs more time to confirm the actual availability of the 2.1 GHz band for 5G NSA, and make the necessary submissions to the Authority to seek approval for future 5G NSA deployments.

#### Deployments in building and road/MRT tunnels:

7. In regard to the Authority's comment that the 2.1 GHz band will facilitate 5G SA deployments in buildings and road/MRT tunnels, we would note that this is technically feasible. However, any such deployments require further study, and agreement amongst the MNOs sharing such infrastructure. We also note that any such deployments will require the Authority's approval, and in particular approval for MNOs to re-use parts of the existing infrastructure for 5G SA.

#### Rollout and deployment milestones:

8. We note the obligations that all 5G SA nationwide networks must meet the Authority's requirements. However, we respectfully disagree with the position that M1 Limited ("M1") and StarHub must comply with additional rollout obligations if we choose to bid separately for the spectrum.

9. We respectfully note that the 3.5 GHz spectrum band has been allocated to both M1 and StarHub. Both parties have also already committed to nationwide 5G SA networks in the 3.5 GHz spectrum band. From a customer-perspective, both M1 and StarHub customers will enjoy 5G services in-line with the rollout commitments made under the 5G call-for-proposal ("CFP") framework (which will be earlier than any rollout commitments for the 2.1 GHz band).

10. It is therefore not reasonable to equate either M1 or StarHub to other MNOs who do not have 5G SA rollout obligations, and expect M1 / StarHub to comply with separate rollout obligations in the 2.1 GHz band.

### Continued access to 3G services for existing 3G subscribers:

11. We agree with the Authority's proposal to allocate 2 x 5 MHz of 2.1 GHz spectrum, on a First-Right-of-Refusal ("**FROR**") basis, to each MNO which has deployed 3G networks in the 2.1 GHz band. We believe that this is a right decision which balances the needs of existing 3G users, while recognising the need to re-farm the spectrum for more productive uses.

12. As points of clarification, we would respectfully seek the Authority's responses to the following questions on the FROR allocation:

- We understand that the FROR lots can only be repurposed for 5G after the 3G MNO shuts its entire 3G network, and that approval for cessation of 3G requires the Authority's prior approval. We seek confirmation that once the MNO has shut its 3G network, it can automatically be allowed to deploy 5G SA services in the FROR band, without the need to seek further approvals from the Authority.
- We seek confirmation that MNOs that choose to take-up the FROR lot cannot subsequently obtain the Authority's approval to provide 3G services in another spectrum band, and thereafter use the FROR lot for 5G services prior to the cessation of its 3G network. This confirmation is necessary to provide certainty to the industry on the rights of use for the FROR lot.

### **2.1 GHz allocation framework:**

#### Auction format:

13. We have no objections to an auction for the 2.1 GHz band. However, given the ongoing market downturn and severe impact to the telecommunications market, it is important to ensure that any auction framework is crafted carefully to ensure efficient outcomes, and discouraging frivolous bidding.

14. We note that the Authority has proposed to adopt a Clock Plus auction format, and that it is also prepared to allow any MNO allocated either one or two 2.1 GHz lots at the end of the Quantity Stage (under specific conditions) to reject this allocation.

15. We would respectfully note that the Clock Plus format has been adopted by the Authority in the past as it is meant to "*result in an efficient auction outcome*" and "*allow bidders to react to price information during the auction and facilitate price discovery*".<sup>1</sup> The Clock Plus format also meant that bidders had to be serious in their bids, and exercise financial prudence, as they faced the risk of getting a subset of their bids.

16. However, by allowing bidders to drop unwanted lots, this creates the following risks:

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<sup>1</sup> Reference the Authority's 10-April 2012 paper on the "*Proposed framework for the reallocation of spectrum for fourth generation ("4G") telecommunication systems and services*".

- Unallocated spectrum lots at the end of the auction; and
- The ability of bidders to drive-up spectrum prices with a low risk of being saddled with unwanted lots at high prices.

17. Take as an example where four MNOs choose to bid for nine spectrum lots (i.e., all three FROR lots have been exercised). At a maximum spectrum cap of five lots, just a single MNO could end up driving the prices of the spectrum indefinitely so long as the other three MNOs did not reduce their demand to less than half of the available spectrum. Having driven up the price, that single MNO could potentially choose to completely drop its demand, and escape without any allocated spectrum. This would unreasonably raise prices for genuine bidders of the spectrum, causing unnecessary financial damage to those bidders. Allowing bidders to drop unwanted lots has the potential to significantly drive-up spectrum prices, to the ultimate detriment of 5G customers and the rollout of 5G services.

18. We therefore urge the Authority to ensure that its auction rules consider such risks. For example:

- To address the risks of unallocated lots, the Authority could consider re-auctioning the leftover lots to winning bidders who have not exceeded the spectrum caps.
- To address the risks of frivolous bidding, the Authority could consider measures such as:
  - Imposing a significant non-refundable fee for participation (with that fee subsequently being used to offset any winning bid prices);
  - Requiring auction participants to provide financial valuations for the spectrum to justify their future bids. Where the participants' bids exceed their financial valuations, this becomes grounds for the Authority's investigation and potential enforcement action;
  - Requiring parties who reject one or two spectrum lot allocations to pay fees for that rejection (e.g., based on a fraction of the last bid price); and
  - If a party rejects the one or two spectrum lot allocation, the auction should restart without that party taking part.

19. Alternatively, the Authority could retain its previous policy, and require bidders to hold the lots they acquire, and meet the rollout obligations associated with those lots. This approach will help to minimise disruptive spectrum bidding, thereby benefitting 5G customers and the rollout of 5G services.

### Assignment Stage:

20. The Authority has stated that, under the Assignment Stage, it will prioritise both “*contiguous selection of spectrum lots and reduce ‘movement’ within the lots to minimise disruptions to existing 3G services*”. We would respectfully note that these objectives may be contradictory.

21. Rather, we believe that the main priority of the Assignment Stage must be to avoid disruptions to existing 3G customers. Requiring any MNO to reconfigure their existing 3G equipment to move to a different part of the 2.1 GHz band would be extremely costly and time-consuming, and this simply could not be done within 3-months. In some cases, this reconfiguration may be entirely impractical. We therefore strongly believe that the clear priority must be given, in the Assignment Stage, to maintaining existing 3G services (particularly in regard to tunnel and in-building 3G coverage).

### Spectrum cap:

22. We believe that the proposed spectrum cap should be amended to four lots (paired) per MNO, excluding the FROR lot. The Authority has acknowledged that 3G services will remain relevant in Singapore up to the medium term. In particular, roaming customers (once travel restrictions are lifted) will rely heavily on 3G services in the foreseeable future. Including the FROR lots within the cap will discriminate against any joint bid, as the FROR lots of both parties in the joint bid will count towards the cap.

23. Having decided on an FROR framework to facilitate 3G, the lots allocated for FROR should then be removed from consideration from the 5G allocation.

### Spectrum Right Duration:

24. We respectfully submit that the spectrum rights duration should be extended to 20 years. This would be consistent with the previous rights duration for the 2.1 GHz band, and provide greater investment certainty for bidding MNOs. Again, given the ongoing economic downturn, it is necessary for the Authority to provide more regulatory assurances to the industry. From an administrative perspective, it also reduces the need for frequent allocations in the future.

25. In its paper, the Authority has also proposed a 3-month transition period, to allow the migration of 3G services. We would reiterate our concern above, that the main priority in the assignment of the spectrum should be to minimise disruption to 3G services. If any equipment changes are needed, this will take far longer than 3-months, and will inevitably cause serious disruptions to 3G services. We therefore submit that the transition period will need to be at least 6-months.

## Conclusion:

26. In summary, StarHub's key points are as follows:

- StarHub supports the re-allocation of the 2.1 GHz band for 5G, with a small range of the spectrum allocated on an FROR basis for 3G.
- As the spectrum rights for the existing 2.1 GHz band will expire very shortly, greater certainty needs to be provided to MNOs currently offering 5G NSA trial services in the band. We respectfully request that the Authority allow a 6-month extension of existing 5G NSA trials in the 2.1 GHz band.
- Both M1 and StarHub are existing 5G CFP winners, and must already comply with 5G rollout milestones. It is not reasonable to equate M1 / StarHub to MNOs without any 5G rollout requirements, and require M1 / StarHub to commit to additional rollout obligations for the 2.1 GHz band.
- The auction framework for the 2.1 GHz band needs to seriously consider the potential risks of having unallocated spectrum lots, and the possibility of parties driving up spectrum prices frivolously. As such an outcome is clearly detrimental to the interests of 5G customers and the rollout of 5G services, the auction rules need to include measures specifically targeted at addressing such risks.
- The priority for the Assignment Stage should be to minimise disruption to 3G services. If any changes in 3G equipment are needed, this will require far longer than 3-months, will be prohibitively expensive and will cause serious disruptions to 3G services.
- The spectrum cap should be amended to four lots, excluding the FROR lots which are meant exclusively for 3G services in the medium term.
- The duration of the spectrum rights should be extended to 20 years to take into consideration the current downturn in the economy, and to provide greater investment certainty for bidding MNOs.

27. StarHub is grateful for the opportunity to comment on this matter and we sincerely appreciate the Authority's consideration of our comments.