
CONSULTATION PAPER ISSUED BY

**THE INFO-COMMUNICATIONS MEDIA DEVELOPMENT
AUTHORITY**

ON

**PROPOSED POLICY FRAMEWORKS FOR THE ALLOCATION OF
800 MHZ, TDD 1900 MHZ AND FDD 2100 MHZ SPECTRUM
BANDS**

**Submission by StarHub Mobile Pte Ltd to the
Info-communications Media Development Authority**

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Introduction:

1. StarHub Mobile Pte Ltd ("**StarHub**") wishes to thank the Info-communications Media Development Authority of Singapore (the "**Authority**") for the opportunity to comment and provide inputs on its proposed spectrum allocation frameworks for the 800 MHz, TDD 1900 MHz and FDD 2100 MHz spectrum bands.
2. We are generally agreeable with the proposed allocation framework for the 800 MHz and TDD 1900 MHz bands.
3. In terms of the FDD 2100 MHz spectrum, we see this as a key 3G band. Given the ongoing need for 3G services (particularly from inbound roamers), the allocation framework for the FDD 2100 MHz spectrum needs to be carefully reviewed, to ensure minimum disruptions to 3G services provided by the existing mobile network operators ("**MNOs**"). The reallocation of spectrum in the FDD 2100 MHz band should also not result in an overall reduction in service quality provided to mobile customers in Singapore.
4. StarHub's detailed responses to the Authority's questions are attached below. We sincerely appreciate the Authority's consideration of our comments.

StarHub's Response to the Authority's Questions:

Question 1: IMDA seeks views on the proposed allocation approach for the 800 MHz spectrum band, in particular:

(a) Whether the proposed lot sizes allow for meaningful use of the spectrum or if there are other alternative combinations of spectrum lot sizes that should be considered for efficiency reasons;

5. We have no objections to the proposed lot sizes. We note that the 3GPP 36.101 section 5.6.1 allows both 3 MHz and 5 MHz lots.

Question 1:

(b) Whether the proposed spectrum right duration is adequate from a business viability and investment perspective; and

(c) The reasons for your views on the above.

6. While certainty needs to be provided to the winners of the spectrum rights, the Authority also needs to consider the possibility that there could be future uses for the 800 MHz spectrum which might better maximise its economic value. We would therefore prefer a shorter licence duration. During this licence period, the Authority should further review the possibility of migrating existing users out of the 800MHz band. A shorter licence duration would also be aligned with the lower outdoor coverage requirements imposed on winners of the 800 MHz spectrum (as compared to the more stringent quality of service ("QoS") standards imposed on MNOs).

Other comments:

7. In its consultation paper, the Authority has stated that the 800 MHz band is for "dedicated enterprise use". We would request clarification on how this is defined, and how the Authority would prevent the spectrum rights holder from utilising the spectrum to provide non-enterprise services.

8. In addition, if the Authority is mandating minimum coverage obligations for winners of the 800 MHz spectrum, it will also need to review the space provided under the Code of Practice for Info-communication Facilities in Buildings ("COPIF"). Without COPIF support, the winner of the 800 MHz spectrum band may not be able to meet outdoor coverage requirements.

Question 2: IMDA seeks views on the proposed allocation approach for the TDD1900 MHz spectrum band, in particular:

(a) Whether there is a need for additional filters if the guard band between FDD and TDD systems is 5 MHz, and the specifications of the required band-pass filter;

9. We note that CEPT Report 39 states that a 5 MHz guard band is sufficient for simultaneous use of TDD and FDD in 2 GHz bands.

Question 2:

(b) Whether there are known technical frameworks for the co-existence of LTE-based networks operating in 3GPP band 1 and band 33/39;

10. The framework for co-existence between band 1 and band 33/39 is defined in CEPT Report 39. However, we note that there is limited use of bands 33/39 globally.

Question 2:

(c) Whether the proposed lot sizes allow for meaningful use of the spectrum;

(d) Whether the proposed spectrum right duration is adequate from a business viability and investment perspective; and

(e) The reasons for your views on the above.

11. 10 MHz will be *the minimum* lot size allowable for meaningful TDD deployments. We also have no objections to the proposed 7 – 10 year licence fee. However, it might not be reasonable for the Authority to impose a 50 – 75% nationwide outdoor coverage requirement for holders of this band. As mentioned above, there is limited use of bands 33/39 globally, and demand for services in the band may not support such a widespread rollout of services.

12. Similar to our comments above, we would also reiterate the following points:

- The Authority needs to define what “*enterprise mobile services*” mean, and how it will ensure the rights holder of the TDD 1900 MHz band only deploys services for “*enterprise*” use; and
- If the Authority insists on a minimum outdoor coverage requirement for the holder of the TDD 1900 MHz band, there should be amendments to COPIF to ensure that the rights holder can request space within buildings for its deployments.

Question 3: IMDA seeks views on the proposed allocation approach for the FDD2100 MHz spectrum band, in particular:

(a) Whether the proposed FROR allocation allows existing 3G mobile network operators to serve the needs of their customers or if there are other alternative combinations of FROR allocations that should be considered; and

(b) Whether the proposed spectrum right duration is adequate from a business viability and investment perspective; and

(c) The reasons for your views on the above.

13. We agree with the Authority’s views that 3G networks are still needed within the short to medium term. In particular, inbound roamers rely heavily on 3G networks for voice services. Given Singapore’s reputation as an international business hub and tourist destination, there will be strong demand to keep the 3G networks active to support roaming customers.

14. We also agree that there needs to be a FROR mechanism, to support existing rights holders of the FDD 2100 MHz band. However, to meet existing service standards offered to

3G customers, we respectfully suggest that the amount of FROR spectrum should be increased to 2 x 15 MHz per MNO instead. Lots of 2 x 15 MHz would also be consistent with the then-IDA's original allocation of the spectrum in 2001.

15. In terms of the licence duration, we support a licence term of 15 years. This adequately takes into consideration the significant investments that the existing MNOs have made (and continue to make) into our 3G networks to meet the Authority's stringent regulatory requirements (such as 3G QoS coverage and resiliency obligations).

16. We would respectfully also suggest that similar QoS and other regulatory obligations need to apply to new rights holders in the FDD 2100 MHz band. Today, the existing MNOs already utilise this band to meet both outdoor, indoor and tunnel QoS coverage obligations. To ensure that mobile users continue to enjoy similar standards (on an overall basis), it is reasonable that new rights holders should also comply with outdoor / indoor / tunnel coverage requirements in the FDD 2100 MHz band.

Question 4: IMDA welcomes views and comments on the proposed allocation of the spectrum bands in the next allocation exercise, including on the proposed uses and spectrum right durations of the spectrum bands, the proposed "Clock Plus" auction format, the proposed reserve prices as well as the proposed spectrum caps and regulatory obligations to ensure the optimal use of spectrum.

17. StarHub's comments are as follows:

➤ Our understanding is that there will be two separate auctions:

(1) for the 800 MHz and TDD 1900 MHz bands; and

(2) for the 2100 MHz band.

This would be the logical approach as the rights under (1) are not substitutable for the rights under (2).

➤ The Authority needs to ensure that any spectrum won during the auction is contiguous. Unfortunately, today, the spectrum in the FDD 2100 MHz band is fragmented, and makes it more difficult for MNOs to optimally use this band.

➤ We urge the Authority to review the proposed reserve prices for the spectrum. The current proposed reserve price of \$10 – 15 million appears to be too high, especially when compared with the reserve price of \$20 million for the 900 MHz spectrum which was offered in 2017. Given the significantly poorer propagation characteristics of the FDD 2100 MHz band, the reserve price for this spectrum should be significantly less than \$20 million, and closer to, or less than, the lower end of the current proposed reserve price (i.e., equal to or less than \$10 million).

In addition, the FROR price for the FDD 2100 MHz band should also be lower than the reserve price, to take into consideration: (1) the heavy investments already made by

existing spectrum holders; and (2) the need for ongoing investments going forward to meet the Authority's regulatory requirements, and to support 3G services in Singapore.

Conclusion:

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

- We are generally agreeable with the Authority's proposed allocation frameworks for the 800 MHz and TDD 1900 MHz bands.
- If the Authority intends to stipulate minimum coverage obligations for spectrum rights winners in the 800 MHz / TDD 1900 MHz bands, the COPIF needs to be amended accordingly.
- 2 x 15 MHz of the FDD 2100 MHz band should be set aside as FROR lots for each MNO.
- To ensure that, on an overall basis, customers continue to enjoy a good user experience, there needs to be stringent regulatory obligations imposed on any new holder of the FDD 2100 MHz spectrum rights.
- The pricing for the FDD 2100 MHz band should be reviewed, and the reserve pricing for the FROR lots should be further reduced to take into consideration the heavy investments made by the existing MNOs to support 3G services, and the need for ongoing support for 3G services.

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