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A. Summary of Major Points

1. We welcome IDA's allocation of 900 MHz band for the new entrant. However, for sub-1 GHz bands, instead of combining this with 700 MHz band, we would prefer a pairing with 800 MHz band due to its better device ecosystem and certainty of deployment compared with the 700MHz band which is subjected to ASO.
2. For above-1 GHz bands which is crucial for network capacity, 30 MHz at 2.3 GHz band or 40 MHz at 2.5 GHz band should be allocated and reserved for the new entrant.
3. We believe that at least 80 MHz of spectrum is required by the fourth entrant to ensure it can offer meaningful and competitive services.
4. Features should be built into the auction process to avoid the pitfalls of unnecessarily high license fees.
5. We welcome facilitation by the authorities for roll out such as strengthening COPIF, large scale use of AG boxes etc.

B. Statement of Interest

MyRepublic will be keen to pursue the license for the 4th mobile network operator in Singapore and offer competitive and innovative solutions to its users, in support of the nation's wireless broadband development.

C. Comments

Question 1: IDA would like to seek views and comments on the proposed allocation of the 700 MHz band together with other suitable bands for mobile services in the next spectrum allocation exercise; and the mechanism to allow the delay of the commencement date of the 700 MHz spectrum right, and correspondingly, the expiry date as well as the spectrum right payment due date, in the event of a delay in the ASO.

MyRepublic Response:

700MHz spectrum is ideal for coverage. However, the schedule will largely be impacted by ASO of our neighbouring countries which may be delayed. Therefore, it will be difficult to plan and build the network efficiently based on availability of 700 MHz band. For the sub-1 GHz bands, we would prefer the 900 MHz band to be allocated together with 800 MHz band, not 700 MHz band.

We would therefore recommend that IDA considers giving the fourth entrant:

- (1) 20 MHz each in **both** 800 MHz and 900 MHz band (because of its immediate availability);
plus
- (2) topping up to 30 MHz at 2.3 GHz band **or** 40 MHz at 2.5 GHz band.

In conclusion, we believe a minimum of 80 MHz of spectrum is required by the fourth entrant to ensure that it is able to compete effectively, and ensure a more level playing field with respect to the existing players.

We note that in many markets, leading LTE operators have 120 MHz of capacity which permits them to offer speeds up to 450 Mbps with 3 carrier aggregation.

Question 2: IDA would like to seek views and comments on:

- a) The proposed 800 MHz band plan based on the 3GPP band 26, or a combination of 3GPP band 27 and band 5 (excluding the EGSM band), including views on the possible phased approach and timeline to migrate existing users of the band; and***
- b) The impact to existing users (i.e., Trunked radio and SRD) of the 800 MHz band plan based on the 3GPP band 26, or a combination of 3GPP band 27 and band 5 (excluding the EGSM band).***

MyRepublic Response:

MyRepublic feels strongly that all 20MHz x 2 in the proposed Band 26 should be allocated for mobile services now, given the limited spectrum availability in Band 8. Indonesia's regulator is seriously considering the same proposal for Band 26. Allocation for 2 x 8 MHz is deemed sufficient for Trunked Radio. We propose that 814-834 MHz (uplink) /859-879MHz (downlink) be allocated for mobile services, together with the 900 MHz band.

Question 3: IDA would like to seek views and comments on the allocation of the short-term spectrum rights for the EGSM band, including the approach to extend the short-term spectrum right.

MyRepublic Response:

The EGSM cross-border interference between Singapore and Indonesia has largely been resolved, as Indonesian MNOs have migrated their EGSM bands. We feel that IDA can make aggressive plans for this band and need not resort to short-term allocation. We propose that 885-890 MHz / 930-935 MHz be allocated for EGSM from 2017 onwards. This simplifies the award for the use of these blocks and negates the need for short term spectrum rights.

We wish to express concern that the DL of Band 26 is very close to UL of the GSM-R proposed allocation. This will mandate steep filtering requirements for use of the upper edge of Band 26.

Question 4: IDA would like to seek views and comments on:

- a) The proposed re-allocation of the L-band for wireless broadband in Singapore in the longer term; and**
- b) The allocation of the L-band for trial, temporary use and/or commercial services in the interim period.**

MyRepublic Response:

The device ecosystem support for L-band is non-existent (except for LTE-based PPDR applications in China) and hence will be challenging to deploy.

We therefore recommend that there is no use reallocating this spectrum, at this point.

In the long-term, MyRepublic supports deployment of L-band as a way of increasing capacity of the mobile networks.

As an alternative, along with some major vendors (e.g. Qualcomm), we support LTE unlicensed services in the 5.8 GHz band.

Question 5: IDA would like to seek views and comments on:

- a) The proposed approach for local operators to coordinate with neighbouring countries' operators to address potential co-channel interference in the use of the 2.5 GHz band;**
- b) The use of the proposed 5 MHz guard band in the 2.5 GHz band to prevent interference between TDD and FDD systems operating in adjacent bands, versus the imposition of suitable mitigation measures to prevent interference; and**

c) The possible adoption and/or suitable restriction levels for Block Edge Mask, synchronisation of TDD networks and any other suitable mitigation measures to prevent co-channel or adjacent channel interference between different TDD systems or between TDD and FDD systems.

MyRepublic Response:

- a) We support the proposal for local operators to coordinate with neighbouring countries' operators for the deployment of TDD in the 2.5 GHz band, with facilitation effort by the authorities. It is the only practical solution.
- b) 5 MHz guard band between FDD and TDD is deemed sufficient and is the best approach.
- c) For synchronisation between TDD systems of different operators, we need to ensure frame alignment and to agree on which TDD configuration (Number 0-6) to use. Frame alignment requires compliance with 3GPP specifications and GPS synchronisation. Different TDD configuration will give rise to different ratio between uplink and downlink throughputs. MyRepublic prefers TDD configuration 2 which is common and gives approximately 3:1 downlink-uplink ratio. For reference, see the table immediately below.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Question 6: IDA 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 Plus' auction format, as well as the appropriate spectrum caps and regulatory obligations to ensure the optimal use of the spectrum.

MyRepublic response:

We believe that one of the key considerations in introducing a fourth operator, is to ensure that the fourth operator is tasked to accelerate the clock speed of innovation across the whole of the industry.

One way to accomplish this, is to ensure that the pre-qualification process adequately addresses the plan of the potential fourth entrant to do so. There is no room for a me-too player in the market.

The IDA should consider introducing a feature into the auction process to avoid the following pitfalls:

- Higher licence fees, which will mean higher prices to consumers;
- If operators spend large sums to get a licence, they will have less to invest in infrastructure; and
- Auctions put emphasis only on prices and do not take into account other objectives that the Government may want to pursue.

On auction formats, we do not prefer Single-round second price sealed bid auction, as this encourages bidders to put in their maximum bid putting pressure on business case. We recommend Simultaneous multi round ascending auction (online). This is similar to ascending auction but with added benefits of open information about bidders in each round and specific time constraints to arrive at early decision. Advantages of Simultaneous multi round ascending auction (online) include:

- Timelines can be managed effectively
- Linear price discovery
- Competition's actions are visible

As for regulatory obligations to ensure the optimal use of the spectrum, we propose to make it mandatory for the spectrum to be used for mobile services within a period of time (e.g. 2 years), failing which the spectrum shall be recovered for auction or allocation to other operators.

We would also like IDA to explore the possibility for the new entrant to pool spectrum with existing operators, to allow for a more efficient use of spectrum and promote efficiency across overall industry. This can also facilitate faster time-to-market for the new entrant.

Question 7: IDA would like to seek views and comments on the proposed facilitation framework for the new MNO, including on the set-aside spectrum, the reserve price for the set-aside spectrum, the auction format, and the regulatory obligations on the new MNO.

MyRepublic response:

- 1) For spectrum set-aside: the 700 MHz band ASO in neighbouring countries may be delayed given the migration challenges. Even if carrier aggregation of 20 MHz of 900MHz and 20 MHz of 2.3 GHz bands is possible, maximum theoretical download speed is only about 185 Mbps, while incumbent with current spectrum resources can achieve 450 Mbps with carrier aggregation. This places the new entrant at a significant disadvantage and thus MyRepublic proposes the option of setting aside 30 MHz of 2.3 GHz or 40 MHz in 2.5 GHz band for the new operator. The TDD 2.5 GHz ecosystem (network and devices) is well supported with increasing global adoption and with 3 carrier aggregation, peak DL speeds of up to 295 Mbps can be achieved. MyRepublic is fully committed to network innovation and will deploy the latest technologies to support highest speeds and capacities possible with carrier aggregation and high-order modulation.
- 2) IDA should facilitate the use of AG boxes to support small cell / HetNet rollout.
- 3) We would like IDA to strengthen the COPIF rules to facilitate use of rooftop and other spaces for outdoor coverage. We are happy to have a dialogue with IDA on more specific recommendations here to facilitate the necessary changes by the middle of 2016.
- 4) OpenNet (NLT) connection to rooftop is currently under NBAP schedule which is more expensive than residential/Non-residential schedule for building spaces inside. As rooftop is only a slight vertical extension of the floors beneath which can enjoy the cheaper residential/non-residential rates, MyRepublic proposes that rooftop connection be classified under non-residential schedule.
- 5) MyRepublic proposes that nation-wide coverage on the deadline of Sep 2018 covers outdoor or street coverage only and requires only signal turn-on.

Question 8: IDA would like to seek views and comments on the proposed negotiation principles to facilitate wholesale access negotiations between “thick” MVNOs and MNOs.

MyRepublic response:

MyRepublic will enthusiastically support MVNOs.

D. Conclusions

We believe that the measures and recommendations described in the consultation paper support the viable entry of a new operator which will boost innovation and greater competition. However, it is important that this new operator be given the opportunity to compete effectively with the incumbents, and MyRepublic is fully committed to offering the lowest cost of wireless broadband services to users right from the start at the highest possible quality. We thus welcome timely measures to further enhance this facilitation by providing more equitable resources (e.g. spectrum) and strengthening regulations where appropriate to ensure that the new operator is not placed in a disadvantageous position vis-à-vis the existing operators.

In addition, MyRepublic will be in an ideal position to build a completely new LTE-Advanced network which will offer an unprecedented level of faster, disruption-free mobile connectivity, enabling everyone and M2M devices to be connected online all the time. We look forward to be given the opportunity to play a part in this exciting evolution of Singapore's broadband industry.