

SINGAPORE TELECOM MOBILE PTE LTD

RESPONSE TO IDA CONSULTATION PAPER – ALLOCATION OF 3G SPECTRUM IN THE 1900/2100MHz FREQUENCY BAND

1. INTRODUCTION

- 1.1. Singapore Telecom Mobile Pte Ltd (**SingTel Mobile**) refers to the Info-communications Development Authority of Singapore (**IDA**) consultation paper dated 29 March 2010 on the Allocation of 3G Spectrum in the 1900/2100MHz Frequency Band (**Consultation Paper**).
- 1.2. SingTel Mobile is licensed to provide Public Cellular Mobile Telecommunications Services in Singapore and has acquired 2G Spectrum Right(s) to provide 2G mobile services and 3G Spectrum Right(s) to provide 3G mobile services. SingTel Mobile also acquired Wireless Broadband Access Spectrum Right(s) and is licensed to provide wireless broadband services.
- 1.3. SingTel Mobile is committed to the provision of state-of-the-art mobile telecommunications services and technologies in Singapore. As a leading provider of mobile telecommunications services over 2G and 3G networks, high speed data services through General Packet Radio Service (**GPRS**) and High-Speed Packet Access (**HSPA**) technology and wireless services on our WiFi platform, SingTel Mobile has a strong interest in the proposed allocation of 3G spectrum in the 1900/2100 MHz frequency band.
- 1.4. SingTel Mobile welcomes the opportunity to make this submission on the Consultation Paper and the various issues identified by the IDA.
- 1.5. This submission is structured as follows:

Section 1 – Introduction

Section 2 – Executive Summary

Section 3 – General Comments

Section 4 – Specific Comments

- 1.6. SingTel Mobile would be pleased to clarify any of the views and comments made in this document, as appropriate.

2. EXECUTIVE SUMMARY

- 2.1 SingTel Mobile supports the IDA decision to make the remaining 3G spectrum available.
- 2.2 SingTel Mobile supports the IDA proposal to reserve the unpaired spectrum for experimental, temporary and trial use to facilitate innovation.
- 2.3 SingTel Mobile supports the IDA proposal to assign a 3G Spectrum Right for the remaining 3G spectrum such that the new 3G Spectrum Right will expire at the same time as the existing 3G Spectrum Rights.
- 2.4 SingTel Mobile supports the IDA proposal to allocate the remaining 2 x 15MHz of paired 3G spectrum in three (3) separate lots, i.e. in 3G Spectrum Lots of 5 MHz each.
- 2.5 SingTel Mobile submits that the IDA should allow the 3G Spectrum Right owners to freely trade 3G spectrum at any time particularly if it results in higher 3G spectrum efficiency for the mobile operators.
- 2.6 SingTel Mobile submits that the best way to ensure efficient use of the remaining 3G spectrum is to administratively allocate it to the existing 3G mobile operators who have made significant investments in 3G network systems and services, have efficiently utilised the existing 3G spectrum and have clear uses for the 3G spectrum to serve existing customer and market needs.
- 2.7 The IDA should implement a simple administrative allocation of the remaining 3G spectrum in equal parcels (i.e. the 5 MHz Spectrum Lot that is proposed by the IDA) at the stated price, to the existing 3G mobile operators. SingTel Mobile has provided a proposal in our specific comments below as to how this can be carried out.
- 2.8 The basis for deriving a reserve price for the remaining 3G spectrum allocated to existing 3G mobile operators should not be based on the valuation of the existing 3G spectrum but rather, be set at a nominal level that adequately recovers the cost of allocating the 3G spectrum.

- 2.9 Notwithstanding the above, and without prejudice thereto, in the event that the IDA still intends to make available the remaining 3G spectrum via an auction, SingTel Mobile submits that there should be a framework in place that offers the existing 3G mobile operators a “*first – right – of – refusal*” (**FROR**) to the remaining 3G spectrum, that is, only when the existing 3G mobile operators decline to submit an offer for the remaining 3G spectrum, then the IDA could make available the 3G spectrum to a potential new entrant.
- 2.10 In the event that the IDA allocates any 3G spectrum to a new entrant, then SingTel Mobile supports the requirement for a new entrant to also deploy nationwide 3G systems and services within two (2) years from the grant of the Spectrum Right. SingTel Mobile stresses that the new entrant would also need to assume all other licensing, quality and coverage obligations, including minimum 3G Quality of Service obligations (**QOS**) as imposed on the existing 3G mobile operators, requirements to implement 3G coverage in all road and underground tunnels etc.
- 2.11 SingTel Mobile does not support the IDA recommendation of a combinatorial auction format (also known as the package bidding), incorporating the one-time sealed bid format.
- 2.12 SingTel Mobile agrees that the mobile operators should coordinate amongst themselves on the necessary guard band given that such a practice has been carried out successfully thus far without the need for IDA intervention.
- 2.13 SingTel Mobile has provided alternative proposals and recommendations to the IDA for its review; furthermore, in the event that the IDA adopts an auction methodology for the remaining 3G spectrum, the mobile operators would require time to review the IDA auction rules in detail. In such circumstances, we recommend that the IDA defer the allocation by at least one (1) month so that all the views, comments and allocation/ auction rules can be reviewed and carefully considered prior to the allocation.

3. GENERAL COMMENTS

SingTel Mobile supports the IDA decision to make available remaining 3G spectrum

- 3.1. SingTel Mobile supports the IDA's decision to make available remaining 3G spectrum in the 1900/2100MHz frequency band as a timely initiative which will ensure that existing 3G networks can grow in tandem with end-user traffic demands. With the availability of additional 3G spectrum resource, 3G mobile operators can continue to invest in enhancing the capabilities of the 3G network with greater business certainty.
- 3.2. As the IDA has noted in the Consultation Paper, the mobile market has experienced significant growth in 3G and HSPA subscriptions. In particular, the proliferation of smartphones¹ and data-centric mobile devices has fuelled the growth of mobile broadband traffic which exacts a heavy demand on the existing 3G network capacity. This trend is expected to continue unabated in the foreseeable future.
- 3.3. In addition to supporting an exponential capacity growth in mobile broadband data, the 3G mobile operators are also evolving rapidly to meet the increasing demand and expectation for higher mobile broadband speeds of 42Mbps and beyond. Based on the 3G technical specifications, such high levels of throughput require multi-carrier technology and dedicated data-only carriers in order to provide good quality voice and data services. In addition, new technologies such as Femtocell, which is gaining market traction, will also require dedicated carriers for a consistent quality of service to be provided to the consumer.
- 3.4. However, SingTel Mobile is concerned with various proposals raised by the IDA in its Consultation Paper.

Four 3G mobile operator in Singapore

- 3.5. The IDA expresses interest in making available a portion of the remaining 3G spectrum to a fourth 3G mobile operator. SingTel Mobile is concerned about the viability of a fourth entrant to the mobile market in Singapore. Further, there appears to be little merit in making the remaining 3G spectrum available to a fourth operator

¹ "Up to 80% of handsets sold are smartphones", Straits Times, 14 April 2010

when compared with the considerable merit in allocating the remaining 3G spectrum to the existing 3G mobile operators.

- 3.6. Singapore has one of the most competitive and mature mobile markets in the world as demonstrated by a penetration rate of 137.6% (as at February 2010)² and a mobile broadband data market characterised by high-speeds and attractive flat-rate pricing plans³.
- 3.7. SingTel Mobile notes that in 2001, the IDA auctioned four (4) 3G Spectrum Rights but only the existing three (3) mobile operators submitted Initial Offers for three (3) out of the four (4) Spectrum Rights. The mobile penetration rate of approximately 75% in April 2001 was already considered high and competition vigorous, such that no new entry to the market occurred.
- 3.8. The current mobile data market is already experiencing tremendous growth as noted in the Consultation Paper. As the IDA is aware, between the launch of 3G services in the mobile market in December 2005 and March 2010, the 3G customer base has grown exponentially to 3.3 million end-users. With flat-rate pricing plans, end-users are free to consume almost unlimited amounts of data on 3G services; placing a significant strain on the operators' existing 3G spectrum.
- 3.9. To manage this growth, existing 3G mobile operators have already implemented best practice measures in their respective networks. Notwithstanding this, existing 3G mobile operators still require additional 3G spectrum to cater to the increasing data usage as well as to manage the quality of coverage. For example, 3G mobile operators may need to enhance their mobile coverage for high-rise buildings which may face frequency interference from neighbouring countries.

² Statistics on Telecom Services for 2010 (Jan – Jun), <http://www.ida.gov.sg/Publications/20100205111257.aspx>

³ SingTel Mobile – <http://info.singtel.com/personal/communication/mobile/postpaid-plans/price-plans#internetaccess>; StarHub Mobile – <http://www.starhub.com/mobile/mobilevalueaddedservices/maxmobile.html>; M1 – <http://m1.com.sg/M1/site/M1Corp/menuitem.e2f30a2a1a1860b609b422103f2000a0/?vnextoid=c62035f49cbb8110VgnVCM100000695a230aRCRD>

- 3.10. The existing 3G mobile operators have already invested heavily in rolling-out extensive 3G networks in Singapore and demonstrated their ability to fulfil the license obligations and quality of service in relation to the delivery of 3G services. New technologies have also been constantly introduced over the years to meet the demand for higher mobile broadband data speeds (e.g. 21 Mbps⁴) to drive the development of new and innovative services. The existing 3G mobile operators should be facilitated in their endeavours to continue with their extensive network investments and future enhancements.
- 3.11. Existing 3G mobile operators therefore have a requirement for additional 3G spectrum, i.e. the remaining 3G spectrum would be best used by the existing 3G mobile operators to invest in both their current capacity and in technology enhancements i.e. to evolve the current 3G network to support newer technologies such as 42Mbps and beyond, Femtocell, etc.
- 3.12. SingTel Mobile submits that the best way to ensure efficient use of the remaining 3G spectrum is to administratively allocate it to the existing 3G mobile operators who have made significant investments in 3G network systems and services and have clear uses for the 3G spectrum to serve existing customer and market needs.
- 3.13. Notwithstanding the above, and without prejudice thereto, in the event that the IDA still intends to make available the remaining 3G spectrum via an auction, SingTel Mobile submits that it should offer the existing 3G mobile operators an FROR to the remaining 3G spectrum, that is, only when the existing 3G mobile operators decline to submit an offer for the remaining 3G spectrum, then the IDA could make available the 3G spectrum to a potential new entrant.

Allocation framework

- 3.14. The IDA indicates that it intends to allocate the remaining 3G spectrum using an auction.
- 3.15. SingTel Mobile notes that the IDA had auctioned 3G Spectrum Rights in 2001 when there was not yet any 3G deployment and an auction methodology was used as the

⁴ SingTel and Ericsson to present “live” showcase of Mobile Broadband at 21Mbps, <http://info.singtel.com/node/2853>

most efficient means to allocate valuable resource and set the parameters for the roll out of nationwide 3G systems and services.

- 3.16. Whilst the remaining 3G spectrum is limited in quantity, SingTel Mobile considers the current situation differs from that in 2001. The existing 3G mobile operators have achieved nationwide deployment of 3G systems and services. There are currently 3.3 million 3G end-users in Singapore, representing approximately 50% of the total mobile customer base in Singapore.
- 3.17. In short, it is not necessary for the IDA to make use of an auction methodology to allocate the remaining 3G spectrum to existing 3G mobile operators. Instead, the IDA should consider an administrative allocation which allows the existing 3G mobile operators to acquire the remaining 3G spectrum at reasonable prices.
- 3.18. SingTel Mobile does not support the IDA's recommendation of a combinatorial auction format (also known as the package bidding), incorporating the one-time sealed bid format for the purpose of allocating the remaining 3G spectrum to the existing 3G mobile operators. As we have pointed out, the allocation of remaining 3G spectrum should be carried out in such a way that primarily ensures that the 3G spectrum is used in the most efficient manner for the benefit of the mobile market and end-users. A combinatorial auction format inevitably encourages an upward bidding of prices by parties, funds which could otherwise be used on 3G network enhancement for the benefit of end-users.
- 3.19. SingTel Mobile therefore proposes that the IDA adopt a simple administrative allocation and set a cap of one (1) lot of spectrum (i.e. the 5 MHz Spectrum Lot that is proposed by the IDA) for each of the existing 3G mobile operators.
- 3.20. The IDA need not identify the lots available for bidding; all existing 3G mobile operators only need to specify if they are interested in acquiring one (1) lot of 5 MHz spectrum they are entitled to request for, then the process should continue to an actual assignment stage during which the IDA could allow the existing 3G mobile operators to agree amongst themselves as to which specific 3G spectrum lot they should be granted.
- 3.21. SingTel Mobile provides further details in the following sections on this approach.

Reserve Price

- 3.22 Whilst the IDA had set a Reserve Price of S\$100 million per Spectrum Right⁵ in 2001, it is not necessary for the IDA to set the Reserve Price to take into account valuation of the existing 3G Spectrum Rights. As indicated above, there is already nationwide deployment of 3G systems and services.
- 3.23 The basis for deriving a reserve price for the allocation of the remaining 3G spectrum to the existing 3G mobile operators should not be based on the valuation of the existing 3G spectrum but rather, be set at a nominal level that adequately recovers the cost of allocating the spectrum.

Spectrum Trading

- 3.24 SingTel Mobile submits that the IDA should allow the 3G Spectrum Right owners to freely trade 3G spectrum at any time particularly if it results in higher 3G spectrum efficiency for the 3G mobile operators. This is consistent with the IDA's stated objective of ensuring that limited resources, such as frequency, are efficiently utilised.

Timeframe for allocation of spectrum

- 3.25 The IDA has stated that it intends to assign the 3G spectrum for a duration of 11 ½ years, starting from 1 July 2010 and ending on 31 December 2021. Hence, it would appear that the IDA intends to allocate the 3G spectrum by 1 July 2010.
- 3.26 This provides 3G mobile operators with only approximately two (2) months to prepare for the allocation. SingTel Mobile has provided alternative proposals and recommendations to the IDA for its review; furthermore, in the event that the IDA continues to adopt an auction methodology for the remaining 3G spectrum, the 3G mobile operators would require time to review the IDA auction rules in detail. In such circumstances, SingTel Mobile recommends that the IDA defer the allocation by at least one (1) month so that all the views, comments and allocation/ auction rules can be reviewed and carefully considered prior to the allocation.

⁵ Each Spectrum Right consisted of a 2 x 15 MHz paired band and a 5 MHz unpaired band

4. SPECIFIC COMMENTS

Question 1: *IDA invites views and comments on whether IDA should make available the remaining 2 x 15MHz of paired spectrum in the 3G Band in three separate slots.*

- 4.1. SingTel Mobile supports the IDA's proposal to allocate the remaining 2 x 15MHz of paired spectrum in three (3) separate spectrum lots. 3G technology requires 5MHz bandwidth for each carrier therefore the proposed allocation method will facilitate the addition of new carriers and capacity to the 3G network.

Question 2: *IDA invites views and comments on the technologies that are developed for use for the unpaired spectrum. IDA also invites views on the demand for the unpaired spectrum. In particular, do you agree with IDA's assessment to reserve the unpaired spectrum for experimental, temporary and trial use to facilitate innovation?*

- 4.2. The main technology use for unpaired spectrum is Time Division Synchronous Code Division Multiple Access (**TD-SCDMA**) for which widespread use has only been observed for one (1) operator in China i.e. China Mobile. Compared to the global deployment of Wideband Code Division Multiple Access (**WCDMA**) in the paired spectrum, the demand for unpaired spectrum is relatively low. This demand is not expected to change drastically in the near future as WCDMA technology is currently able to meet the demands for mobile broadband data both from a technical perspective (e.g. clear evolutionary path to higher throughput of 42Mbps and 84Mbps) as well as from a market perspective (e.g. economies of scale and a large selection of terminals for end-users to choose from).
- 4.3. We do not see any market demand for unpaired spectrum for commercial deployment therefore SingTel Mobile supports the IDA's proposal to reserve the unpaired spectrum for experimental, temporary and trial use to facilitate innovation.

Question 3: *IDA invites views and comments on the proposed auction parameters including the auction format. Do you agree with IDA's proposal to adopt the combinatorial auction format based on a one-time sealed bid submission if the number of potential bidders is small?*

Duration of Spectrum Right

- 4.4 SingTel Mobile supports the IDA proposal to assign a Spectrum Right for the remaining 3G spectrum such that the new Spectrum Right will expire with the existing 3G Spectrum Rights.

Spectrum Lots

- 4.5 SingTel Mobile supports the IDA's proposal to allocate the remaining 2 x 15MHz of paired spectrum in three (3) separate spectrum lots. However, SingTel Mobile also submits in this paper our views as to how the spectrum lots should be allocated.

Maximum number of lots per bidder

- 4.6 SingTel Mobile refers the IDA to its comments in paragraphs 4.10 to 4.16 below.

Spectrum Trading

- 4.7 The IDA has proposed that trading of the new 3G spectrum will not be allowed for a period of one (1) year from the effective date of grant, and thereafter trading will be permitted subject to the IDA's approval. The IDA has not stated its rationale for such a restriction therefore we are unable to comment on the basis for restricting 3G spectrum trading in the first year.
- 4.8 Notwithstanding this, SingTel Mobile submits that the IDA should allow the 3G Spectrum Right owners to freely trade 3G spectrum at any time particularly if it results in higher 3G spectrum efficiency for the 3G mobile operators. This is consistent with the IDA's stated objective to ensure that limited resources, such as frequency, is efficiently utilised.

- 4.9 Inter-operator trading of frequency is also in line with the IDA's position on guard bands where mobile operators are free to coordinate amongst themselves immediately after the spectrum allocation. SingTel Mobile submits that the IDA should adopt the same position on 3G spectrum trading as there is no obvious benefit to imposing a one (1) year embargo period.

Auction methodology

- 4.10 The IDA has recommended a combinatorial auction format to allocate the remaining 3G spectrum and proposes to limit the existing 3G mobile operators to a maximum of two (2) lots of spectrum.
- 4.11 We refer to our comments in the Section 3 above.
- 4.12 SingTel Mobile does not believe that allocating any portion of the remaining 3G spectrum via auction and/or to a new entrant will ensure that the spectrum is used in the most efficient manner for the benefit of the mobile industry
- 4.13 SingTel Mobile submits that the allocation of the remaining 3G spectrum does not require an auction process. As we have indicated above, the circumstances surrounding the allocation of the remaining 3G spectrum now differ from those during the auction of 3G Spectrum Rights in 2001.
- 4.14 Furthermore, SingTel Mobile submits that the combinatorial auction method encourages an upward bidding of prices by parties, funds which could otherwise be used for 3G network enhancement for the benefit of end-users. Similarly, the one-time sealed bid format is not transparent and encourages overbidding with the consequential effect of end-users ultimately bearing the additional cost.
- 4.15 SingTel Mobile submits that the IDA should employ an administrative allocation method to allocate the remaining 3G spectrum to existing 3G mobile operators so that both the immediate and future needs of the mobile market and end-users can be adequately and efficiently met in a timely manner.
- 4.16 SingTel Mobile therefore proposes the following amendments to the auction framework:

- (a) First, the IDA should allocate the remaining 3G spectrum by way of an administrative allocation. Under such an allocation method, the IDA may require the existing 3G mobile operators to provide evidence that they have maximised usage of their existing 3G spectrum before additional 3G spectrum can be allocated to them.
- (b) Second, the IDA only needs to make available the remaining 3G spectrum in equal parcels, i.e. in the 5 MHz spectrum lots it proposes in its Consultation Paper.
- (c) Third, the IDA only needs to set a cap of one (1) lot of spectrum (i.e. the 5 MHz Spectrum Lot that is proposed by the IDA) for each of the existing 3G mobile operators.
- (d) Fourth, the IDA need not identify the lots available for bidding; all existing 3G mobile operators only need to specify if they are interested in acquiring one (1) lot of 5 MHz spectrum they are entitled to request for, then the process should continue to an actual assignment stage during which the IDA could allow the existing 3G mobile operators to agree amongst themselves as to which specific spectrum lot they should be granted.
- (e) Finally, in the event that the IDA still intends to make available the remaining 3G spectrum via an auction, SingTel Mobile submits that it should offer the existing 3G mobile operators an FROR to the remaining 3G spectrum, that is, only when the existing 3G mobile operators decline to submit an offer for the remaining 3G spectrum, then the IDA could make available the 3G spectrum to a potential new entrant.

Reserve Price and Fees

- 4.17 SingTel Mobile notes that the IDA has proposed to set the Reserve Price at S\$20 million per Spectrum Lot based on the valuation of existing 3G spectrum rights paid by the existing 3G mobile operators and the duration of the spectrum rights.
- 4.18 As indicated in the preceding sections, SingTel Mobile submits the IDA should allocate the remaining 3G spectrum to the existing 3G mobile operators.

- 4.19 Furthermore, in allocating the spectrum to the existing 3G mobile operators, IDA should note that the circumstances surrounding the allocation of the remaining 3G spectrum now differ from those during the auction of 3G Spectrum Rights in 2001. Whilst the IDA had set a Reserve Price of S\$100 million per Spectrum Right⁶ in 2001 to the existing 3G mobile operators, it was with a view to provide the necessary incentive for the existing mobile operators to make full and efficient use of the spectrum for nationwide deployment of 3G systems and services.
- 4.20 The existing 3G mobile operators have already achieved nationwide deployment of 3G systems and services. They have rolled out 3G systems and services to serve 3.3 million 3G end-users in Singapore, representing approximately 50% of the total mobile customer base in Singapore.
- 4.21 In short, the basis for deriving a reserve price for the remaining 3G spectrum to the existing 3G mobile operators should not be based on the valuation of the existing 3G spectrum but rather, be set at a nominal level that adequately recovers the cost of allocating the spectrum.

Rollout and use obligations

- 4.22 SingTel Mobile submits that the remaining 3G spectrum should be allocated to the existing 3G mobile operators.
- 4.23 Notwithstanding this, in the event that the IDA adopts an auction approach and makes the remaining 3G spectrum available to a new entrant, then SingTel Mobile supports the requirement for a new entrant to also deploy nationwide 3G systems and services within two (2) years from the grant of the Spectrum Right. Furthermore, SingTel Mobile stresses that the new entrant would also need to assume all other licensing, quality and coverage obligations, including minimum 3G Quality of Service obligations (**QOS**) as imposed on the existing 3G mobile operators, requirements to implement 3G coverage in all road and underground tunnels etc.

⁶ Each Spectrum Right consisted of a 2 x 15 MHz paired band and a 5 MHz unpaired band

Question 4: *IDA also invites views and comments on whether any guard band should be provided between the 3 lots of 2 x 5 MHz spectrum and the amount needed to manage potential interference.*

- 4.24 SingTel Mobile agrees that the 3G mobile operators should coordinate amongst themselves on the necessary guard band given that such a practice has been carried out successfully thus far without the need for IDA intervention.