



**Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz
Band upon Expiry of the Existing Frequency Assignments for 3G
Mobile Services**

Response to Second Consultation Paper

FOREWORD

The Authorities acknowledge that Option 3 will directly and substantially harm users.¹ In contrast, Option 1 will preserve for consumers the substantial and globally recognized benefits of a highly competitive market. On this basis alone, Option 3 should be rejected and Option 1 adopted unless the Authorities can clearly demonstrate that Option 3 has concrete benefits that outweigh its substantial detriments and also the benefits of Option 1.

HKT has never witnessed a consultation where the regulator has stated that a direct and substantial harm to users, which is completely avoidable, is in the public interest. Option 3 is in the interest of China Mobile and will raise new tax revenues from consumers for the Treasury. But it cannot in any way be stated that Option 3, which will substantially harm service quality and increase costs, is in the public interest.

¹ In reality the harm to users will be significantly greater than that admitted by the Authorities as the Authorities' multiple assumptions are too optimistic.

EXECUTIVE SUMMARY

1. In this Consultation Paper, the Authorities express a clear preference for Option 3, which involves offering the incumbent 3G Operators a right of first refusal on two-thirds of their spectrum while re-auctioning the remainder. Two new SUF calculation methods are also put forward in the paper, both based on a combination of benchmarks and the price fetched for the re-auctioned portion of the spectrum.

2. HKT's position can be summarized as follows:

- There should be a presumption in favour of licence renewals (i.e. Option 1). This maintains the existing incentives to invest and innovate. This also maintains the high level of competition and consumer benefits which now characterize the market. Most importantly, a presumption in favour of licence renewals ensures service continuity is not disrupted.
- The Hong Kong mobile market has high levels of investment, innovation, competition and consumer benefits. These are well recognized as global bests, and are acknowledged by the Authorities.
- The high investment and competition levels indicate that spectrum is used efficiently.
- The '1G' and '2G' spectrum renewals during the 1990's and 2004 were all done based on a presumption in favour of licence renewals. Global best practices also support a presumption in favour of licence renewals. Precedent should be followed.
- The Radio Spectrum Policy Framework contains an "over-riding public interest" test relevant to spectrum renewals. That test references the 2004 2G renewal which in turn references the importance of providing a stable investment environment, ensuring continuity of customer service, making efficient use of spectrum and providing satisfactory service to users with continuous investments and improvements. This language coupled with the facts require the 3G licences to be renewed.

- The Authorities acknowledge that Option 1 is, on the facts, best for service continuity for consumers. The Authorities also recognize that Hong Kong consumers are enjoying globally recognized benefits of investment, innovation, efficiency and competition. Nevertheless, based on inadequate analysis and speculation which is represented by a series of “could’s”, “might’s”, “maybe’s” and “possibly’s” the Authorities inexplicably “leap frog” Option 3 past Option 1.
 - The Authorities acknowledge that Option 3 would have a serious negative impact on service continuity. The Authorities indicate that the negative impact will “only be 18%”. However, the assumptions behind this “only 18%” calculation are questionable. HKT’s calculations indicate that the negative impact on consumers could very likely be significantly greater (i.e. about 40%). But even at 18%, why would the Authorities prefer an option which so directly and substantially harms users?
 - The Authorities propose extremely high SUFs. This will simply be a new and unnecessary tax on consumers. Maximizing payments to the Treasury is not a statutory or policy requirement. Certainly the Treasury does not need the money. Hong Kong and global precedents require a lower level of SUF.
 - Spectrum trading is a market-based approach and should be introduced now.
 - An process run by a monopoly seller who takes back spectrum (which is already being used by operators) and then releases bits of the spectrum back into the market via an auction cannot in reality be considered to be a market-based exercise where willing sellers meet willing buyers on a level playing field.
 - The winners under Option 3 are China Mobile and the Treasury. The losers are 15 million users of mobile services who eventually end up paying more but for a lower quality of service. This result is both unlawful and irrational.
3. Only Option 1 satisfies the stated criteria of ensuring customer service continuity, enhancing efficient spectrum utilization, preserving the existing high level of competition and promoting network investment and innovation. Accordingly, Option 1 should be adopted.

4. Both the First and Second Consultation Paper clearly indicate that Options 2 and 3 will cause real and significant harm to users. At the same time, the Consultation Papers fail to identify a concrete upside which could justify imposing such substantial harm on consumers. The Consultation Papers admit that Option 1 does not present such downsides.

5. Unless and until a regulatory impact assessment based on hard evidence and a thorough analysis demonstrates that the downsides of Options 2 and 3 are outweighed by their upsides, and that these upsides also outweigh the benefits of Option 1, Options 2 and 3 cannot be adopted.

6. In sum:

- Only Option 1 satisfies the stated objectives and is in the public interest.
- The analysis supporting Option 3 is superficial and unconvincing.
- Precedent, global best practices and public policy strongly support Option 1.
- Spectrum trading is an essential part of a “market-based approach” to spectrum management and should be implemented immediately.

7. The way forward:

- The existing spectrum should be renewed on a no fixed term basis.
- Spectrum trading should be introduced now.
- Any SUF should only recover the costs of administering spectrum.

INTRODUCTION AND COMMENTS

8. This submission is made by Hong Kong Telecommunications (HKT) Limited (“**HKT**”) in response to the Second Consultation Paper on *Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band (“3G Spectrum”)* upon Expiry of the Existing Frequency Assignments for 3G Mobile Services (“**Consultation Paper**” or “**Paper**”) issued jointly by the Commerce and Economic Development Bureau (Communications and Technology Branch) (“**CEDB**”) and the Office of the Communications Authority (“**OFCA**”) (collectively, the “**Authorities**”) on 28 December 2012.

9. This is a critically important consultation. It concerns the treatment of spectrum which has already been used under fifteen year licences by the four incumbent 3G Spectrum holders, which today serves eight to nine million 3G customers in Hong Kong. It is not a consultation about the release of fresh spectrum which is as yet unused. Any decision taken by the Authorities regarding the continued use (or otherwise) of the 3G Spectrum must therefore be carefully considered to avoid any adverse impact on millions of customers of mobile services.

10. In response to the **First Consultation Paper**², the Authorities have proposed in this Consultation Paper to adopt Option 3, a hybrid spectrum assignment method which is part-administrative allocation and part-auction. Two methods for setting the Spectrum Utilisation Fee (“**SUF**”) in relation to the assigned spectrum under Option 3 are put forward. The

² Consultation Paper on *Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band upon Expiry of the Existing Frequency Assignments for 3G Mobile Services* issued by the Authorities on 30 March 2012.

Authorities raise specific questions and ask for comments from the industry in respect of these proposals

11. Before answering the specific questions contained in the Consultation Paper regarding the Authorities' proposals, certain issues must be raised which are central to the discussion in deciding what approach to adopt in re-assigning the 3G Spectrum. These issues include the following:

- I. The right of first refusal, i.e. the presumption of renewal as found in Hong Kong and other markets should be adopted.
- II. Only Option 1 satisfies the stated objectives.
- III. The Radio Spectrum Policy Framework issued by the Commerce, Industry and Technology Bureau in April 2007 (“**SPF**”) supports the adoption of Option 1.
- IV. The continuing need for 3G spectrum after October 2016.
- V. A review of the Authorities' four stated objectives: (i) customer service continuity; (ii) efficient spectrum utilization; (iii) effective competition; and (iv) investment and innovation all support the adoption of Option 1.
- VI. The required cost/benefit appraisal still needs to be done by the Authorities.

12. For the avoidance of doubt, HKT incorporates its previous representations in this submission.

I. The right of first refusal approach (Option 1) should be adopted

13. In the first round of consultation, HKT, along with the other existing holders of the 3G Spectrum³ and other respondents, supported a

³ Namely, CSL Limited, Hutchison Telephone Company Limited and SmarTone Mobile Communications Limited (collectively, the “**3G Operators**”).

right of first refusal being granted to the incumbent spectrum holders in respect of their 3G spectrum holdings, i.e. Option 1. HKT demonstrated that this was appropriate in view of the precedent established by OFCA in the 1990's and 2004, global best practices, preserving investment and innovation incentives, promoting competition, enhancing the efficient use of spectrum and most importantly preserving high quality services at reasonable prices to consumers. The right of first refusal is supported by other licensees and commenting parties as well as international bodies:

Recommendation 10 – There should be a presumption in favour of licence renewal for operating and spectrum licences to encourage long-term investment and minimise risk of service disruption to customers. (GSMA, “Licensing to support the mobile broadband revolution”, May 2012)

As much as possible, policy makers and regulators should strive to promote investor's confidence and give incentives for long-term investment. They can do this by favouring the principle of 'renewal expectancy', but also by promoting regulatory certainty and predictability through a fair, transparent and participatory renewal process. (World Bank, “Mobile licence renewal: What are the issues? What is at stake?” June 2005)

14. The right of first refusal has also been adopted in overseas jurisdictions such as UK, USA, Canada, New Zealand, Australia and the EU and therefore has established a precedent.

15. In paragraph 16 of the Consultation Paper, OFCA seems to suggest that, despite the incumbent operators having previously been granted the right of first refusal to their spectrum based on their satisfactory levels of investment and service quality, the carriers now suddenly consider this course of action to be inappropriate:

According to the incumbent 3G operators, the former TA had offered the right of first refusal to the incumbent operators in 2004, for them to acquire their original holding of frequency spectrum in the 900 MHz and 1800 MHz bands upon expiry, having taken into account the public interest consideration. What the incumbent operators have not pointed out in their submissions is the fact that subsequently both the Government and the industry had come to the view that such an ad hoc approach was less than satisfactory. At the request of the industry and in view of the need to formulate a long-term spectrum management policy, the then Secretary for Commerce, Industry and Technology promulgated the Policy Framework in April 2007 following a public consultation exercise.

16. With respect, the Authorities have misrepresented the mobile operators' reasons for asking for a long term spectrum policy framework to be devised by the Government. This was not because they were dissatisfied with the right of first refusal or presumption of renewal or the decision to re-assign to them their existing spectrum upon expiry but because they were concerned that, at that time, there was no clear policy setting out how the Government intended to deal with future spectrum releases and renewals. Accordingly, in the interests of transparency, the industry considered it necessary to request the Government to establish a spectrum policy framework with a right of first refusal for renewals as a clear part of that framework.

17. To be clear, HKT still considers granting the incumbent spectrum holders the presumption of renewal (i.e. right of first refusal) of their spectrum to have been wholly appropriate in 2004. As in other OECD markets recognizing the importance of telecommunications services, this should continue to be the practice in the future for other spectrum renewals such as the 3G Spectrum currently under discussion. To do otherwise will undermine the stability of the investment environment in

Hong Kong which would be fundamentally inconsistent with a market-based approach to spectrum allocation and use.

II. Only Option 1 satisfies the stated objectives

18. In the First Consultation Paper, the Authorities stated their intention to select an option which would best meet the following four objectives: (i) ensuring customer service continuity; (ii) efficient spectrum utilization; (iii) promotion of effective competition; and (iv) encouragement of investment and promotion of innovative services.

19. The Authorities have recognized in both consultation papers that Option 1 is the only option that preserves service continuity to users. That is, Option 1 is best for consumers in terms of service quality (i.e. the best option in terms of no dropped calls, highest data speeds, etc.). The Authorities have also recognized that the market is extremely competitive, with investment and innovation producing global bests for consumers.

20. The Authorities, however, in order to get to their preferred result of Option 3, then adopt a two-pronged strategy: (i) downplay the direct and substantial harm to users which they admit would result under Option 3; and (ii) determine (based totally on speculation and no concrete analysis) that Option 3 would better promote investment, innovation, efficiency and competition compared to Option 1. The Authorities then conclude that the benefits of Option 3 (even with its direct and substantial harm to consumers) outweigh the benefits of Option 1. The Authorities' analysis lacks substance, is unconvincing and is irrational. HKT would therefore request the Authorities to revisit their analysis.

21. As explained at length in HKT's submission under the First Consultation Paper and in response to this Consultation Paper, Option 1 is the only option that ensures:

- Service continuity is maintained as there will be no changes to the current spectrum holdings.
- Spectrum will not be fragmented and hence will continue to be used efficiently.
- The intense levels of competition already existing in the market place will be maintained.
- Network investment and service innovation will continue to be encouraged as there are no uncertainties surrounding the possible loss of spectrum.

and hence should be adopted.

III. The Radio Spectrum Policy Framework supports the adoption of Option 1

22. The 3G Operators, and in particular, HKT (PCCW Mobile), have a legitimate expectation of renewal and that the public interest exception of the Radio Spectrum Policy Framework will be consistently applied, including following the referenced precedent established in 2004 for renewal of the 2G spectrum.

23. According to the SPF at paragraph 3.1, a market-based approach is required to be adopted in the event that there are competing demands for a piece of spectrum, unless there are overriding public policy reasons to do otherwise. Three issues arise from this approach: (i) What does “market-based” mean; (ii) Are there “competing demands”; and (iii) Are there “overriding public policy reasons to do otherwise.”

A “Market-Based Approach”

24. The SPF defines the term “market-based approach” at footnote 1 to mean “*relying on market forces to ensure the efficient use of spectrum as a public resource*”. The word “auction” is not found in the SPF.⁴ HKT explained in its previous submission why it would be entirely inconsistent with a “market-based approach” to withdraw this spectrum and to re-auction it. In short, market forces would not strip a licensee of spectrum and then re-auction it. A spectrum auction should not be taken to mean a market-based approach.

25. An initial spectrum release to the market may, consistent with a market-based approach, be undertaken through an open, competitive bidding process. However, once released to the market, there is a need, under a market-based approach, for certainty as to the continuing ability to access that spectrum. This certainty is essential so as to encourage investment in the necessary infrastructure to fully and efficiently use the spectrum (some of which necessarily requires long-term investments) and so that investments that have been made by the spectrum holders are not undermined or stranded. As the **May 2012 GSMA Report**⁵ observes:

*Re-auctioning spectrum at the end of the licence should be limited to situations where there has not been evidence of substantial investment [...] or situations where an existing licensee decides to reject a licence renewal offer.*⁶ [Emphasis added]

⁴ A “market-based approach” for spectrum management purposes is defined in the SPF as one which relies on market forces to ensure the efficient use of spectrum as a public resource. See footnote 1 in paragraph 3.1 of the SPF.

⁵ GSMA report dated May 2012 entitled: *Licensing to support the mobile broadband revolution*.

⁶ Recommendation 11 of the May 2012 GSMA Report.

26. Once the spectrum has been released into the market, its efficient allocation can (and should, to be consistent with a market-based approach) be addressed by allowing spectrum trading so that the market can decide on any re-allocation of spectrum going forward. Indeed, spectrum trading is the most efficient market-based approach to spectrum management. It is fast, flexible and does not rely, with respect, on the Government trying to guess or estimate what the market would do. Spectrum trading should therefore be introduced in Hong Kong now, especially since it has the support of the industry, the Authorities' consultants and the Authorities themselves.

27. Spectrum trading is consistent with global best practice. It is an efficient and effective mechanism for allocating spectrum in the secondary market, being driven purely by market forces. It is straightforward to implement and would help resolve the issue regarding the 3G Spectrum. There is no reason to delay the introduction of spectrum trading in Hong Kong, especially since it has been under discussion since 2006 and supported by all the stakeholders, including the Government since 2008/09. Indeed, in developed countries such as the UK, Australia, Canada, USA and most of the EU, spectrum trading has been successfully introduced. Indeed, several countries like the UK have adopted a policy of indefinite licence terms coupled with spectrum trading in order to fully rely on market forces and thereby maximize user benefits. Hong Kong should follow these examples.

28. If the Authorities are minded to truly act consistent with a market-based approach then spectrum trading should be permitted immediately so that it can be used to resolve any perceived issues concerning

competing demands for spectrum, including the 3G Spectrum. The SPF requires a market-based approach to be applied and spectrum trading is the only clear and rational way to achieve this in the circumstances.⁷

29. The Authorities, however, have not properly addressed this issue in the Consultation Paper and continue to narrowly interpret a market-based approach as meaning holding a spectrum auction, although certain statements made by the CEDB in the Consultation Paper indicate that it is in favour of spectrum trading:

*[...] A level of SUF that reflects the full market value of the spectrum is important in ensuring that the scarce spectrum resource is put in the hands of the operators which value it the most and which will put it to the most productive use. This is ideally obtained through the operation of a market mechanism which is free from distortion of any kind.*⁸ [Emphasis added]

30. Accordingly, HKT would urge the Authorities to accept that a true market-based approach would permit the use of spectrum trading to determine how spectrum should be assigned or transferred (and at what price) where there are competing demands for the spectrum. An auction where a monopoly seller withdraws spectrum that has already been allocated into the market so it can re-auction it to buyers is not a market-based approach and hence will undermine investment incentives, likely cause very significant and unnecessary wasted/stranded costs and significant service disruptions and other harm to consumers. This cannot be said to be a true market-based approach. HKT references its comments supporting the introduction of spectrum trading found in its

⁷ China Mobile could easily make use of spectrum trading to acquire any needed 3G spectrum.

⁸ Paragraph 40 of the Consultation Paper.

submission in response to the First Consultation Paper at paragraphs 77 to 90.

There is no competing demand

31. The competing demand criterion of the SPF must contemplate a real demand by a market player or new entrant who otherwise lacks 3G capacity (in this case) and who cannot fully compete in the market without such capacity. Although recognizing that market competition is already intense, the Authorities state that China Mobile has indicated a desire to acquire 3G spectrum and, on that basis, conclude that there are “competing demands” for the 3G Spectrum.

32. In reality, competing demand from China Mobile does not exist. First, China Mobile has one or more MVNO agreements with certain 3G licensees. [X]

33. Thus, while China Mobile may prefer, for internal reasons, to directly own rather than lease or share capacity, it already has full and direct access to substantial 3G capacity and has no real need for additional 3G spectrum. China Mobile has substantial 3G capacity obtained per market forces, and could obtain more if needed via further commercial negotiations, as well as via spectrum trading (if the Authorities would allow spectrum trading to be introduced).

34. China Mobile has not indicated (or demonstrated) that it would be more efficient, more innovative, more competitive or be able to reach more customers if it were able to purchase by auction more spectrum. Nor have the Authorities undertaken any proper appraisal of the various options, including the option of spectrum trading to allow the costs and

benefits of each to be weighed one against the other on a "*firm and transparent basis*" for the Authorities' eventual decision under the terms of the SPF.

35. In sum, China Mobile's 3G spectrum needs are already being fully met by the market and hence there is no demonstrated competing demand for the spectrum. On this basis, there is no need to consider an intervention by the Authorities to facilitate the re-allocation of spectrum (whether by triggering a re-auctioning or by some other means). In any case, the required cost benefit analysis of the various options being considered has not been carried out.

36. In addition, China Mobile has substantial spectrum. In the recent 2.5/2.6 GHz spectrum auction, China Mobile managed to acquire 2 x 5 MHz of spectrum. The digital dividend which is scheduled for 2015-16 (i.e. before the expiry of the assignment period for the 3G Spectrum in October 2016) should afford all operators a chance (even if not totally clear yet) to increase their spectrum holdings. Other spectrum could be brought to the market by OFCA.

Over-riding public interest grounds exist

37. The SPF states that over-riding public interest grounds need to be considered. Further elaboration on the application of this point was provided in paragraph 17 of the Legislative Council Brief adopting the SPF⁹:

⁹ Legislative Council Brief on Proposed Spectrum Policy Framework – Outcome of Consultation issued on 24 April 2007.

We maintain our view that, at this stage, there should be no legitimate expectation for renewal at the end of spectrum assignments and have made this clear in paragraph 4.2 of Annex A. The TA should decide whether a new spectrum assignment, with the same or varied radio frequencies, should be given to the licensees. To provide greater transparency, we make it clear in the policy framework that the spectrum policy objectives and public interest grounds should be considered when the TA makes such decisions. Indeed, the TA considered, among other factors, public interest grounds when he decided to offer the “right of first refusal” to 2G mobile carriers whose licences expired in 2005 or 2006.
[Emphasis added]

38. As can be seen from the above, overriding public interest grounds were used to justify re-assignment of the 2G spectrum back to the incumbent operators in 2004 instead of withdrawing and re-auctioning the spectrum.

39. Per the Telecommunications Authority’s (“TA’s”) decision dated 29 November 2004, the 2G spectrum was re-assigned to the existing spectrum holders on the basis that they had made efficient use of the frequency in the past, that it was important to provide a stable investment environment and ensure customer service continuity, and the fact that the operators had been providing satisfactory service to their subscribers, with continuous investment and improvements:

In the Consultation Papers, the TA proposed to grant the “right of first refusal” to the nine incumbent GSM and PCS licensees who had been making efficient use of the frequency spectrum assigned to them in the past years. The TA also took into account the importance of providing a stable investment environment and ensuring continuity of customer service. It was also recognized that the nine incumbent GSM and PCS licensees had been

*providing satisfactory service to their subscribers with continuous investments and improvements.*¹⁰

40. In addition, in paragraph 13 of the consultation paper in the same proceeding dated 19 March 2004, the TA justified re-assigning the 2G spectrum back to the incumbent operators for the sake of service continuity and to prevent confusion and public inconvenience:

The TA is aware of the consideration to provide a stable investment environment and to ensure continuity of customer service. At present, there are more than 7 million mobile customers in Hong Kong. Discounting the relatively small number of customers subscribing to the CDMA and TDMA services, the GSM and PCS services have become a general commodity penetrating all walks of our society and affecting every aspect of our daily life. The existing GSM and PCS licensees have been providing a satisfactory service with continuous investments and improvements. They have also been making efficient use of the scarce frequency spectrum assigned to them. If they were not allowed to continue offering their services to their customers, there would be severe service interruptions, causing confusion and inconvenience to the public. The social consequence would not be acceptable to society as a whole.

41. The market conditions and public interest considerations which the TA took into consideration when he re-assigned the 2G spectrum back to the incumbent operators remain relevant for the 3G Spectrum. Today, the market has become more competitive, substantially greater investment has been made, there is more service innovation and prices have continued to drop. The operators are providing a good and satisfactory service to over eight million 3G customers. Spectrum is being used efficiently and more efficient use is driven by innovation, investment,

¹⁰ See paragraph 6 in the TA's Statement on Licensing of Mobile Services on Expiry of Existing Licences for Second Generation Mobile Services.

user requirements and competition. Any other option is likely to result in severe service interruptions, causing confusion and inconvenience to the public with social consequences that would not be acceptable to society as a whole. Accordingly, just as in 2004, there are clear overriding public interest grounds today to offer the incumbent 3G Operators a first right of refusal on their existing 3G Spectrum. Not following the SPF and refraining from granting a right of first refusal would be irrational and unlawful.

IV. The continuing need for 3G spectrum after October 2016

42. In paragraph 29 of the Consultation Paper, the Authorities suggest that by October 2016 (when the current fifteen year assignment term for the 3G Spectrum expires), a large number of 3G customers will have migrated to 4G mobile services because all mobile operators are already offering 4G mobile services today, and more and more 4G or multi-band handsets/tablets are becoming available on the market. This leads the Authorities to believe that the incumbent 3G Operators can make do with less 3G Spectrum come October 2016 and hence they should not be concerned if a portion of their spectrum were to be taken away from them for re-auctioning as proposed under Option 3. The Authorities present no real analysis, but generally opine that 3G customers and 3G usage will decline.

43. The Authorities cannot have it both ways. If there will be a substantial migration from 3G to 4G then China Mobile will not have a real and substantial need to acquire 3G spectrum beyond 2016. China Mobile has access to sufficient 3G spectrum which can be extended

beyond 2016 by commercial arrangements and/or spectrum trading, and has the most 4G spectrum to meet its operating requirements. [X]

44. What OFCA should be doing to help alleviate any spectrum shortage problem is to make more spectrum available to the market. Besides the digital dividend, from a review of the latest Spectrum Release Plan for 2013-2015 issued by OFCA on 25 February 2013, it is clear that there are bands of spectrum which could be released for use by the mobile operators:

- *2010-2019.7 MHz.* This band was previously put out to auction in February/March 2011 but was not acquired by any of the bidders. OFCA could make this available again via auction.
- *2570-2620 MHz.* This band was previously put out to auction in January 2009 but was not acquired by any bidder. Part of this band (2575-2615 MHz) was subsequently assigned by OFCA for Government use. However, no explanation has been given as to why such a substantial chunk of spectrum needs to be reserved by the Government when there are more pressing demands for its use in the private sector. OFCA should consider releasing this band for auction.

V. OFCA's calculated average degradation in data download speed is not acceptable (customer service continuity objective)

45. In Annex 2 of the Consultation Paper, OFCA sets out its assumptions and calculations to show that, under their proposed Option 3, if they remove one carrier from each of the incumbent 3G Operators, at worse, their 3G mobile services would “only” suffer an 18% reduction in data download speed. They suggest that this is acceptable given that, even if the 3G Operators were allowed to retain all their spectrum, their 3G mobile services would still suffer a 9% reduction in data download

speed in view of the expected significant increase in mobile data traffic between now and October 2016.

46. In addition, per paragraph 31 in the Consultation Paper, OFCA claims that since only one carrier is being removed from each of the incumbent 3G Operators, this should not affect the level of service indoors as the operator can still continue using two carriers while reconfiguration work on the IRS facilities is being carried out.

47. To be absolutely clear, an 18% degradation in service is not a tolerable outcome. This is doubly true in a services and information based economy. HKT is not aware of any regulator at any time suggesting that a significant drop in service quality is in the public interest. HKT is bound by its licence to offer a “good, efficient and continuous service in a manner satisfactory to the Authority” (General Condition 5). In the past, the Authorities have imposed financial penalties on networks who suffered a temporary (i.e. a few hours) outage. Are the Authorities now saying that a long term 18% degradation service is expected, acceptable and lawful? Will the Authorities now tell consumers to expect and fully tolerate mediocre service as the norm? That is certainly not HKT’s preference in treating customers. This is also inconsistent with the Telecommunications Ordinance (“**Ordinance**”) and the SPF.

48. OFCA is also wrong in thinking that reconfiguration work on the IRS is minimized, and thus service discontinuity is not a serious concern, if only one carrier is removed. In paragraph 26 of the Consultation Paper, the OFCA has already accepted that mobile data customers would be

expected to face severely degraded mobile service indoors if Option 2 is implemented due to the need to reconfigure the IRS. If this is the case, it is not clear to HKT why it should not be equally necessary to reconfigure the IRS, and be equally disruptive, in the event of Option 3 being implemented and there is a partial re-assignment of spectrum bands.

49. In reality, any change in the spectrum being used by the operators in the IRS (whether this be one carrier or all three carriers) will require significant reconfiguration works to be undertaken, and this will affect all customers using the operator's mobile service in the indoor area covered by the IRS.

50. In any case, OFCA's calculations per Annex 2 of the Consultation Paper are flawed in several ways. The impact on consumers will be much greater than an 18% decline in service quality for the following reasons:

- OFCA has under-estimated the future mobile data growth in Hong Kong. While OFCA projects that there will be a 6-fold increase in total mobile data traffic from 2012 to 2016, Cisco projects a much higher data traffic growth of 13-fold between 2012 and 2017.¹¹ Using Cisco's traffic projection (or even a somewhat lower estimate) would result in a much more severe degradation in service. HKT's own analysis and view of the market is not inconsistent with the Cisco estimate.
- OFCA assumes that there will be a significant migration from 3G to 4G mobile services by the time the 3G Operators are required to give up their spectrum and hence the operators should require less spectrum to service their remaining 3G customers. However, it is highly debatable whether users will be willing to spend more money to upgrade their handsets in order to be able use 4G mobile services, particularly in view of the quality and value for money of

¹¹ *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012-2017* released on 6 February 2013.

the 3G mobile services currently being provided in the market. The extent of OFCA's assumed migration from 3G to 4G mobile services is therefore highly optimistic and which HKT believes to be incorrect. HKT notes the slow migration from 2G to 3G, the cost and availability of 4G handsets, and the general willingness of a substantial segment of the population to pay for both 4G handsets and services when 3G handsets and services suffice. But, of course, if OFCA is correct then China Mobile would have no real demand for the 3G Spectrum.

- OFCA's assumption in its calculations is that network capacity can be doubled (2x) due to the expansion/addition of cell sites. However, given the current congested landscape in Hong Kong, it is extremely difficult and expensive to expand/add further cell sites. The addition of cell sites at traffic hotspot areas, in particular, is problematic due to the very short distance currently between cell sites. In addition, all the 3G Operators are already adopting the latest HSPA technology and providing data speeds of 42 Mbps which is the maximum speed supported by the current smartphones in the market. On this basis, OFCA's assumption is totally unrealistic. Unfortunately, the calculation model adopted by OFCA is extremely sensitive to this figure. Given the case of extremely uncooperative landlords, building access problems and tunnel/MTR issues (which have been the norm in Hong Kong for the past twenty years), HKT expects this figure to be lower. For the sake of illustrating the sensitivity of this figure to the calculated results, HKT will adopt a figure of **1.5 times** increase in network capacity in OFCA's model.
- The total number of 2 x 5 MHz carriers which are currently in use for 3G mobile data services in 2012 per item (a) in the table should be **16**, not 15. Accordingly, the average number of 2 x 5 MHz carriers per incumbent 3G Operator (4 in total) which are currently in use for 3G mobile data services in 2012 per item (d) in the table should be $16/4=4$, not $15/4=3.75$.
- The total number of 2 x 5 MHz carriers which will be available for deployment of 3G/4G mobile data services by October 2016 per item (b) in the table should be **24**, not 26.

Accordingly, adding together the number of carriers which are currently in use and the number of carriers which will be available for deployment of 3G/4G mobile data services by October 2016 gives a total of $16+24=$ **40** carriers per item (c) in the table, not $15+26=41$ carriers as calculated by OFCA.¹² This means that the average number of carriers per incumbent 3G operator which will be available for 3G/4G mobile data services by October 2016 per item (e) in the table comes to $40/4=$ **10**, and not the $41/4=10.25$ computed by OFCA.

Using HKT's figures, the resulting estimated growth in spectral capacity for mobile data services comes to a slightly lower figure of $10/4=$ **2.5 times**, rather than OFCA's $10.25/3.75=2.73$ times. Assuming an optimistic figure of 1.5 times increase in network capacity, this means the mobile data network capacity of the incumbent 3G Operators can only grow by a factor of $2.5 \times 1.5=$ **3.75** times as compared to the $2.73 \times 2=5.46$ times calculated by OFCA. On this basis, even if HKT adopts OFCA's more conservative estimate for mobile data growth between 2012 and 2016 at 6 times, and assuming that all the spectrum is retained by the 3G Operators (the base case scenario), using OFCA's model in Annex 2 produces a drop in data download speed at $(6-3.75)/6=$ **37.5%** compared to OFCA's $(6-5.46)/6=9\%$ which is derived using the same model.¹³

- Continuing the calculation, if OFCA's model in Annex 2 were to be used to perform the computation on the basis of one carrier being taken away from the incumbent 3G Operators (i.e. as under Option 3) then, using the above revised figures and assumptions, the result would be a **44%** drop in average data download speed. This is a significant difference compared to the 18% calculated by OFCA and illustrates the sensitivity/importance of the assumptions behind the model.¹⁴ It also demonstrates the harm to consumers created under Option 3.

¹² This is because one carrier was acquired by China Mobile in the last auction.

¹³ If the Cisco traffic forecast estimate is used, the drop in data download speed would be even greater: $(13-3.75)/13=71\%$.

¹⁴ If OFCA intends to conduct an exercise to verify the degree of degradation in data download speed, e.g. with the assistance of consultants, then HKT would request that it be closely involved in all the required steps, including the design of the methodology to calculate the amount of degradation. HKT would raise serious

51. Such a level of service degradation is clearly unacceptable to HKT and ultimately to HKT's customers.

52. On this basis, it is clear that Option 3 could result in more serious service quality and continuity problems than those made out by OFCA in Annex 2 of the Consultation Paper. These would not happen under Option 1 (status quo). The adoption of Option 3 cannot therefore be said to be in the public interest. Option 1 is clearly best for consumers.

VI. Re-auctioning the 3G Spectrum does not necessarily lead to more efficient use (efficient spectrum utilization objective)

53. In paragraph 34 of the Consultation Paper, the Authorities claim that re-auctioning part of the 3G Spectrum will facilitate assignment of the spectrum to the operators that value it most and hence lead to more efficient use of the spectrum bands.

54. There is no clear linkage between deep pocketed players and spectrum efficiency. Auctions provide the opportunity for operators with the strongest financial resources to acquire spectrum. Although operators who “want” the spectrum the most and have the deepest pockets will bid the most for the spectrum, this does not mean that they will use the spectrum in the most efficient manner. For example, 21 ViaNet obtained 4G spectrum in 2012. Yet the spectrum is not being used in the market yet and there is no indication that 21 ViaNet will by itself use that spectrum efficiently in the future. Indeed, it may be that spectrum efficiency would have been better served if the frequency band were

objections if OFCA were to proceed with this exercise and not allow the industry to be involved or comment on the results before reaching a conclusion.

acquired by an existing mobile operator rather than 21 ViaNet as the spectrum would then already be in use and serving customers today.

55. In addition, the value the operator places on the spectrum could simply be derived from competitively preventing another operator from acquiring spectrum or meeting a corporate goal to own spectrum rather than lease. For example, would it really be in the public interest if the operator with the most 4G spectrum also obtained the most 3G spectrum? Under such circumstances, contrary to the intention of the Authorities, spectrum efficiency (and competition) would be lessened rather than increased. Indeed, this could cause prices to rise. Similarly, no efficiency gains would have resulted from re-auctioning the spectrum and there would have been no positive impact on service innovation. In fact, the opposite would have occurred, with a risk of undue concentration of spectrum in the hands of one operator which also has a significant degree of market power because of its protected and privileged access to a very large market on Hong Kong's borders.

56. The problems with properly calibrating and conducting auctions to avoid pitfalls are well recognized in other jurisdictions, as are the dangers in spectrum managers seeking to make decisions about the highest value "use" of spectrum. As the *Consultation Paper on Proposed Spectrum Policy Framework*¹⁵ itself observed:

In reality, it is extremely unlikely that a spectrum manager has all the information and market data he needs to make the "right" decision in determining the highest value use of spectrum from time to time. (Paragraph 12)

¹⁵ Issued in October 2006 by the Commerce, Industry and Technology Bureau.

57. The only truly market-based way to ensure the continued efficient use of spectrum once it has been allocated into the market (whether by an auction or other means) is to allow spectrum trading.

VII. Option 3 would jeopardize the existing levels of competition (effective competition objective)

58. In paragraph 37 of the Consultation Paper, OFCA agrees that the market for mobile services in Hong Kong is already hyper-competitive, yet it argues that implementing Option 3 will bring about even more competition because it enables operators to acquire more spectrum or for new players to enter the market. On the other hand, OFCA considers that Option 1 will only maintain the existing (high) levels of competition.

[...] the ability to acquire additional spectrum under Option 3 will provide an opportunity for the incumbents to obtain their desired amount of frequency holding in the 1.9 – 2.2 GHz band, taking into account their different profiles of frequency holding in different bands. By optimising their level of spectrum holding in the 1.9 – 2.2 GHz band under Option 3, the incumbents should be able to compete more efficiently with their counterparts in service provision to the benefits of consumers. Not to mention that Option 3 will also provide the opportunity for new entrants to enter the market. All these would bring about enhanced competition.

59. OFCA's reasoning is misconceived. The amount of 3G Spectrum is limited and so any changes brought about by a spectrum re-auction will be a zero-sum game; an operator who successfully acquires spectrum at the auction can only do so at the expense of another. It is therefore inconceivable how competition will be improved by implementing Option 3, particularly given that the level of competition in the market today is already intense. In fact, there is high risk that competition would be lessened in the event that one of the incumbent 3G Operators acquires

more spectrum or if China Mobile acquires all of the auctioned spectrum, thereby putting the other operators who are forced to give up their spectrum at a competitive disadvantage. For example, the market could fragment into two tiers: 3G rich spectrum holders versus 3G poor spectrum holders. Such an outcome would result in less investment, innovation and, most importantly, less competition. Efficiency levels would decline. In this case, competitive distortions resulting from the adoption of Option 3 will have effectively outweighed any perceived benefits of re-auctioning the spectrum.

60. Conversely, Option 1 preserves the existing hyper-competitive levels of competition in the market place in which China Mobile has sufficient 3G capacity, and hence runs no risk of adversely affecting the status quo.

61. The Authorities' analysis supporting a conclusion that Option 3 will bring an increase in competition is not convincing. At paragraph 37, it is stated that the Communications Authority ("CA") agrees with the respondents that *"Hong Kong is already one of the most competitive [markets for mobile services] in the world, with five MNOs serving a population of over seven million."* From there, it is stated that the CA *"reasonably believes that Option 3 will equally (if not more likely) bring about innovative services and new business paradigms, leading to an even more competitive market with wider product choices for consumers."* The same paragraph then indicates the possibility of an incumbent acquiring a *"desired amount of frequency holding"* to *"compete more efficiently"*. Option 3 would also provide an *"opportunity for new entrants to enter the market"* and all these would *"bring about enhanced*

competition”. In contrast, Option 1 could “*give only the status quo position.*”

62. However, the introduction of a new entrant in a zero sum spectrum game under Option 3 fragments the spectrum, and this likely decreases both spectrum efficiency and competition. In such an environment, the status quo looks to be the best result.

63. The sentence in paragraph 37 of the Consultation Paper stating that the “*CA reasonably believes that Option 3 will equally (if not more likely) bring about innovative services and new business paradigms [...]*” is particularly disturbing. While this is a very nice (but extremely vague) sentence, there is no analysis or evidence presented to support it. Spectrum fragmentation cannot ordinarily lead to innovative services or new business paradigms or enhanced competition in a market that is already innovative and competitive. Concrete analysis is required, not fanciful sentences.

64. The CA appears to assume that the entrance of a new competitor must increase the levels of competition and consumer benefits. This is not necessarily true. For example, are consumers better off if spectrum is fragmented and competition is less efficient? Are consumers better off if the cost of providing services increases or if economics of scale are lost? Competition in the investment intensive mobile market can be maximized with a modest number of players having appropriate scale. There is no evidence that the Hong Kong market lacks high levels of innovation, investment or competition.

65. Finally, the CA has produced no analysis that spectrum fragmentation, a loss of scale or additional entry will produce consumer benefits. Similarly, no analysis as to the benefits (other than speculation) of Option 3 has been provided. Please also refer to HKT's comments in response to the First Consultation Paper at paragraphs 28 to 31.

VIII. Option 3 leads to unnecessary “investment” (investment and innovation objective)

66. The CA notes at paragraph 35 of the Consultation Paper that:

In regard to encouragement of investment, the incumbent 3G operators opined that only Option 1 would provide the necessary regulatory certainty for them to continue to invest in their network. The CA notes that they have invested in different system upgrades over the years for higher capacity and transmission speed in order to support the robust growth in mobile data usage by customers. It is agreed that uncertainty in the few years towards the end of the existing term of 3G frequency assignments may affect the investment incentive of some of the incumbents.

67. In reality, under Option 3, no licensee today can be sure it will retain all its spectrum. This uncertainty will last another eighteen months at least. While demand is increasing and licensees should be investing, it is unclear (i.e. unlikely) if new investments will earn a fair return. Investments relating to indoor and outdoor coverage, new services, cell sites, IRS, etc. are all impacted. Uncertainty negatively impacts investments, innovation and competition as the CA notes above.

68. The Authorities claim that operators would be forced to make further investments in their networks to maintain their level of service if part of their spectrum were removed from them under Option 3, and they

are not able to re-acquire their spectrum under the auction process.¹⁶ They see this as creating a positive incentive for operators to continue investing in order to compensate for the loss of spectrum, to maintain their quality of service and to remain competitive in the market.

[...] Even if some incumbents turn out to be unable to acquire any 1.9 – 2.2 GHz spectrum in the auction, they are expected to have an even greater incentive and in fact great commercial need to invest in the network in order to compensate for the loss of spectrum capacity, so long if they want to maintain the quality of services and remain competitive in the market. The development of new technologies and services will also stimulate investment.

69. Such investment may or may not occur. It may be wiser not to make such investments depending on a costs/revenues and net benefits analysis. Even if such an investment were made, it would be neither productive nor efficient. This type of “investment” is wasted and inefficient in the sense that it need not have been made if the operators’ spectrum holdings were left intact and, even if such investment were to be made, it does not result in improved services or further service innovation. It is also wasted in that it produces no net benefit (i.e. consumer welfare) to users. At best, it simply enables the existing service level to be maintained, while just adding a layer of costs to the industry and users that did not need to be incurred. It is more likely that investments will be deferred, which would have a negative impact on service quality and innovation.

IX. Inadequate appraisal of costs and benefits under Option 3

¹⁶ See paragraphs 35 to 36 of the Consultation Paper.

70. The Authorities make constant reference to the SPF as the key document which must be followed when deciding how to assign the 3G Spectrum when the assignment period expires in October 2016. In proposing to adopt Option 3, however, it is apparent that they have not followed the provisions of the SPF. Under paragraph 4.4 of the SPF:

Before the conduct of a spectrum refarming¹⁷ exercise, an appraisal of the impacts of different options, including an option of “do nothing”, will be undertaken by the TA before a decision is taken.

71. Clearly, the Authorities here have not conducted the requisite impact (e.g. cost and benefit analysis and other effects) assessment. As seen in the First Consultation Paper, their rationale for adopting Option 3 is based on many “possible’s” and “maybe’s”. This is not analysis. There is also no attempt to quantify the benefits of Option 3 relative to the high costs involved or to analyze the potential outcomes of an auction of part of the existing 3G Spectrum holdings. As described earlier, OFCA’s attempt at analyzing the impact of adopting Option 3 on the average data download speed as contained in Annex 2 of the Consultation Paper is seriously flawed and hence cannot be considered adequate. It is also very limited in scope so falls woefully short of a full and comprehensive appraisal of the costs and risks of proceeding with a re-auctioning, as against any perceived benefits, as required by the SPF.

¹⁷ The term “spectrum refarming” covers the current re-assignment exercise for the 3G Spectrum. Spectrum refarming refers to OFCA varying or withdrawing spectrum assignments and takes place after an existing spectrum assignment period expires. See paragraph 18 in the *Legislative Council Brief on Proposed Spectrum Policy Framework – Outcome of Consultation* released on 24 April 2007 by the Communications and Technology Branch, Commerce, Industry and Technology Bureau.

72. HKT reiterates the points made in its letter of 17 August 2012 to the CEDB, including as to the unlawfulness of any re-auctioning of the rights without a proper appraisal of the various options being considered which would allow the costs and benefits of each to be weighed one against the other as a “*firm and transparent basis*” for the Authorities' eventual decision under the terms of the SPF.

RESPONSES TO SPECIFIC QUESTIONS RAISED IN THE CONSULTATION PAPER


73. In this section, HKT provides its response to each of the specific questions raised in the Consultation Paper. HKT's responses to the questions are without prejudice to its position that the 3G Spectrum should be offered to the incumbent 3G Operators on a right of first refusal basis, i.e. Option 1, coupled with an indefinite licence term and spectrum trading. Mobile services are too important to users and the economy to experiment with Option 3.

Proposed Band Plan for Spectrum Re-assignment

Question 1: Do you agree that Slots 3, 4, 9 and 10 in the 1.9 – 2.2 GHz frequency band as depicted in Figure 1 should be put out for re-auction?

74. In the Consultation Paper, OFCA proposes to grant the incumbent 3G Operators a right of first refusal on 2 x 9.9 MHz of their existing spectrum holding while taking back 2 x 4.9 MHz from each of their holdings for re-auctioning in accordance with the following band plan:

	HKT 14.8 MHz			CSL 14.8 MHz			SmarTone 14.8 MHz			Hutchison 14.8 MHz		
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
Lower Sub-band (MHz)	1920.3		1935.1		1949.9		1950.1		1964.9		1979.7	
Upper Sub-band (MHz)	2110.3		2125.1		2139.9		2140.1		2154.9		2169.7	

 Blocks to be offered to incumbent 3G Operators under right of first refusal

 Blocks to be made available for re-auction

Where: Blocks S1, S6, S7 and S12 are of 5 MHz each
 Blocks S2, S5, S8 and S11 are of 4.9 MHz each
 Blocks S3, S4, S9 and S10 are of 4.9 MHz each

75. This band plan has been designed such that the spectrum blocks to be re-auctioned will not be scattered around the 1.9 – 2.2 GHz frequency band. In this way, the new spectrum assignees (whether this be one of the incumbent 3G Operators or a new operator) will be able to acquire a contiguous spectrum block of 2 x 9.8 MHz to roll out their services.

HKT's response

76. HKT cannot agree to Slot 3 in its existing spectrum holding being taken back by OFCA and put up for re-auction. This is because it is critical to HKT to retain this block in order to ensure that it can continue to offer an acceptable level of voice service. As OFCA is fully aware from the many complaints raised by HKT in the past, HKT's 3G voice service is suffering from severe interference caused by the use of illegal DECT phones in the band which is directly adjacent to its lowest carrier, i.e. next to Slot 1. On this basis, if HKT is only be permitted to retain two carriers then it has no choice but to retain those two slots which are (relatively) free from interference, i.e. Slot 2 and Slot 3.

77. In fact, most recently, HKT wrote to OFCA on 25 March 2013 to provide an update on the large number of outstanding cases of interference which have not yet been cleared by OFCA. Given this situation, it would be unfair if HKT were not allowed to retain Slot 3 as this would immediately result in a downgrading of the quality of its voice service and customer complaints would be sure to ensue. There is no basis to prefer China Mobile (or any other potential bidder) over HKT in selecting a slot. The winner of Slot 1 could subsequently engage in a spectrum swap or spectrum trade if useful.

78. Instead of taking back Slot 3 from HKT, if HKT is indeed required to return one carrier from its existing spectrum holding, then HKT would suggest giving back Slot 1 to OFCA as this would cause the least disturbance to its voice service.

79. In the alternative, if OFCA will only offer Slot 1 and Slot 2 to HKT as the spectrum on which HKT is offered a right of first refusal (“**RFR Spectrum**”) then HKT would prefer that Slot 1 and Slot 2 be separately priced and offered to HKT. In addition, a substantial discount on the SUF for Slot 1 must be offered to HKT in order to take into account the interference issue. A discount for Slot 2 would also be appropriate. HKT can see no reason why it should be asked to suffer at the benefit of other carriers.

SUF of the RFR Spectrum

Question 2: What are your views on setting the SUF of the RFR Spectrum in accordance with the market-based mechanism as proposed in the First and the Second Methods for consultation as outlined in paragraphs 56 – 60 above?

80. In the First Consultation Paper, OFCA put forward four methods of calculating the SUF for the RFR Spectrum. These were: (i) using a mock auction to set the level of the fee; (ii) using the Least Cost Alternative (“**LAC**”) method; (iii) using market benchmarks; and (iv) using the auction price for the re-auctioned spectrum as benchmark for the RFR Spectrum.

81. All of these were apparently not accepted by OFCA in the Consultation Paper. As to the mock auction, it is stated that any such exercise could be subject to regulatory gaming and produce uncertainty

for the 3G Operators over the price they would need to pay if they exercised their right of first refusal on their spectrum. Using an LCA method to determine the SUF was considered too subjective given the number of assumptions involved in calculating the price of the spectrum. The use of market benchmarks would require OFCA to determine which past auctions would best reflect the current market value of the RFR Spectrum but was seen to be too favourable to the incumbents. Using the price fetched for the re-auctioned spectrum as the price for the RFR Spectrum was also rejected on the grounds that the auction could be manipulated to suppress the price of the RFR Spectrum.

82. Two new methods of setting the SUF for the RFR Spectrum are now proposed in the Consultation Paper. These appear to be linked to Option 3:

- (i) *First Method.* Based on the royalty payment for the 3G Spectrum in 2015/16 or the level of SUF as determined by auction for the re-auctioned spectrum, whichever is higher. (The royalty payment for the 3G Spectrum in 2015/16 (i.e. the last year of the fifteen year licence)¹⁸ has been calculated by OFCA to be \$77 million per MHz, which means that the RFR Spectrum will carry an SUF of at least (\$77 million x 19.8 MHz) = \$1,524.6 million.)

¹⁸ This figure is \$151.243m. The average SUF for the 15 year licence term is about \$87m per year for the entire (29.6 MHz paired + 5 MHz unpaired) = 34.6 MHz of 3G Spectrum which would produce a substantially lower but still very high renewal fee for the RFR Spectrum.

- (ii) *Second Method.* Based on the average of the weighted average of the relevant past market benchmarks and the SUF of the re-auctioned spectrum as determined by auction.

OFCA states that this component of the calculation comes to \$80 million per MHz. However, it is not clearly explained by OFCA how it derives the weighted average of the past market benchmarks, i.e. the SUF achieved from selected past spectrum auctions in Hong Kong.

HKT's response

83. HKT is disappointed that the Consultation Paper has not further developed the SUF proposals found in the First Consultation Paper or the comments made by respondents in the First Consultation Paper.

84. The purpose of the SUF is not to maximize revenue for the Treasury. There is no statutory or policy basis for that purpose. Rather, the purpose of the SPF and the SUF is to generate the greatest overall benefit (i.e. consumer welfare) to society. In regards to a service which is critical to the personal and business use in an information-based services economy (and has a multiplier effect), the SUF should be “lower” rather than “higher”. High SUFs limit the ability of operators to invest and lead to higher prices. Low SUFs enable investment, innovation, efficiency, competition and substantial benefits to both users and the economy. It is therefore disappointing that the SCED (at paragraph 40) finds the proposal for a low SUF to be “*totally unacceptable*”. Instead, an SUF level which reflects the full market value of the spectrum is supported; an

approach which maximizes revenue for the Treasury but disregards the needs of consumers or the economy.

85. The SPF at paragraph 2 lists its policy objectives. These include the efficient use of spectrum, to facilitate the introduction of advanced and innovative services, strengthening Hong Kong's position as a hub and meeting Hong Kong's international obligations and being a world city (and gateway to Mainland China). Maximizing revenues for the Treasury is not mentioned. In the section of the SPF dealing with spectrum pricing, it is indicated that SUFs will apply to non-government spectrum usage. Again, no mandate appears to be given to maximize revenues from auctioned or market-based mechanisms.

86. As to benchmarking, it is stated that the auctions referenced are selective and serve the interests of the incumbent 3G Operators. With respect, this is unfair. The benchmark approach is both transparent and easy to implement. The primary issue raised by the incumbents were that irrelevant benchmarks should not be used (i.e. the 850/900 MHz spectrum band is not a comparable spectrum band because of its much better performance and hence much higher price).

87. Further, relevant offshore cases could also be looked at to increase the sample size on a MHz and per person basis, which is often done in other markets, either directly or as a "check". Because of different spectrum characteristics, only relevant cases would be looked at; in particular sub-1 GHz spectrum auctions would not be considered as these are usually valued significantly higher than frequency bands in the higher spectrum range due to their superior characteristics, e.g. better indoor

penetration which is of particular importance in Hong Kong. HKT is extremely concerned that SUF pricing options which would not yield extremely high prices may not be under further consideration. Indeed, the questions which are not asked and the analysis not conducted would suggest this.

88. The two new SUF proposals raise numerous issues. First, there is no precedent around the world for setting the SUF using such a hybrid method involving part royalty payments, part benchmarks and part future RFR Spectrum auction results. Such an approach renders the SUF calculation process highly convoluted and produces results which reflect neither past experience nor current market prices.

89. Second, the lack of transparency behind the calculation under the Second Method is striking as less relevant auctions appear to have been given the greatest weight.

90. Third, despite OFCA's efforts to incorporate present royalty payments and past market benchmarks into the SUF calculation, there is still an important element of uncertainty surrounding the SUF that will eventually be paid by the incumbent 3G Operators for their RFR Spectrum since both calculation methods still rely on the results of the future 3G spectrum auction (i.e. the one-third that is taken back by OFCA). Like any other business, HKT cannot make business decisions (i.e. whether or not to accept the right of first refusal on its spectrum) without knowing for certain the price it will have to pay. With billions of dollars in costs, licensees should not be forced to participate in guessing games.

91. Fourth, both methods result in SUF levels which seem extremely high. Deliberately setting a high SUF which is well in excess of the costs associated with administering the spectrum may be contrary to the provisions of the Ordinance. Under Section 32I(3) of the Ordinance:

A spectrum utilization fee may be calculated on the basis of a royalty or any other basis that includes an element of excess of the simple recovery of the cost of providing a service by the Authority.

92. That is, per the Ordinance, the SUF should only be set at a level which reasonably exceeds the relevant costs. Clearly, the amounts calculated by OFCA in this instance are well in excess of the associated costs. There is no statutory language or language in the SPF which states that maximizing revenues is the goal. Nor is this found in the licences or regulations, or anywhere else. Efficiency, competition, innovation and the public interest are noted. When the 3G Spectrum was first auctioned, for instance, the Government announced:

*Our primary aim of holding an auction was not to maximize Government revenue.*¹⁹

93. In this regard, it is also relevant to make reference to the recent case in the Czech Republic whereby the regulator halted a spectrum auction (for the frequency bands 800 MHz, 1800 MHz and 2.6 GHz) because the bids being placed were escalating way beyond the reserve price. The regulator feared that if the spectrum costs were too high, customers would eventually suffer through higher service charges and the possible slowdown in investment in 4G networks. Here, the Government

¹⁹ See Press Release on 19 September 2001 issued by the Information Technology and Broadcasting Bureau on *HK well positioned to offer cutting edge 3G services*.

stressed that the main objective for holding the auction was to ensure quick availability of 4G services for customers and not about profits for the Government. HKT suggests that the same approach should be adopted here for the benefit of customers in Hong Kong. HKT would note the Plum Report findings on this matter, that the proposed SUF is about 4 times too high.

94. In relation to the specific calculations behind the two SUF calculation methods proposed by OFCA, HKT has the following comments/questions:

First Method

- Why does OFCA only use the final SUF payable in 2015/16 as the starting point for its calculation? In the schedule of SUF payments, the amounts payable increase year on year, with the final year amount being the highest. To be fair, if this dot.com bubble SUF were to be used (which we do not believe it should), the amount should be based on a fully discounted average of the SUF paid during the fifteen years.
- Even if we assume that the unit price of \$5.1 million per MHz per annum is correct, OFCA's calculation of the SUF for the RFR Spectrum is still flawed. In OFCA's calculation, it simply multiplies the \$5.1 million by 15 to derive the price per MHz for the fifteen years for which the renewed spectrum will be assigned. However, OFCA cannot ignore the time value of money. The \$5.1 million per MHz relating to each of the future years must be discounted by an appropriate discount rate to properly reflect the price that must be paid in one lump sum in 2016. This is basic finance/economics. In this case, even if we were to use an assumed rate of 10% as the discount rate, there is a significant difference between the result derived and the \$77 million per MHz for the fifteen years computed by OFCA in the Consultation Paper. From HKT's calculations, the SUF payable per MHz for the new fifteen year spectrum term is only around \$42 million per MHz, i.e.:

$$\$5.1\text{m} + \frac{\$5.1\text{m}}{(1+0.10)^1} + \frac{\$5.1\text{m}}{(1+0.10)^2} + \dots + \frac{\$5.1\text{m}}{(1+0.10)^{14}}$$

- OFCA has neglected to include the 5 MHz TDD block held by each of the incumbents as part of their total 3G Spectrum holding when calculating the SUF which they are currently paying per MHz. As a result, the \$ per MHz figure calculated by OFCA is over-stated.

Second Method

- OFCA does not properly explain how its \$80 million per MHz is derived. It has not disclosed the weightings it has used for each of the relevant past benchmarked prices. This makes it difficult to properly comment on the Second Method. However, substantial weight appears to have been given to the least relevant (and most expensive) past auction prices.
- Past benchmarks should not take into account the SUF of the 850/900 MHz spectrum auction as this is sub-1 GHz spectrum which is known around the world to command a higher price than spectrum in the range greater than 1 GHz due to its superior penetration characteristics which is of particular value in Hong Kong. The 3G spectrum in question is significantly less able to penetrate buildings.
- OFCA stated upfront that it intended to ignore the results of the 2.5/2.6 GHz spectrum auction (March 2013) in the RFR Spectrum SUF calculation because it was concerned that strategic bidding behavior would distort the outcome of that auction. However, this would be inconsistent with the fact that it intends to take into account the results of the auction for the 3G Spectrum blocks that will be taken back by OFCA. How is it that OFCA is not concerned about strategic bidding in this particular auction? OFCA should act consistently.

95. The CA should not take into account the sub-1 GHz spectrum auctions. The CA should also exclude the previous dot.com bubble 3G royalty scheme SUF. The CA should use offshore examples as a check or as part of the calculation for SUF. In any case, whatever method is used

to calculate the SUF, any SUF payable should only be due after the current assignment period of the 3G Spectrum expires (i.e. in October 2016) otherwise duplicate SUF payments would be made for the same spectrum.

Auction Design

Question 3: Do you agree that the Re-auctioned Spectrum should be open for bidding by all interested parties, including the incumbent 3G operators?

96. As OFCA proposes that the SUF payable for the RFR Spectrum partly depends on the outcome of the spectrum auction under Option 3, it proposes various measures in the Consultation Paper to avoid gaming or distorting behavior in the auction.

HKT's response

97. HKT's primary position is that re-assignment of the 3G Spectrum should not be determined via auction. All of the spectrum should be granted to the incumbent 3G Operators on a right of first refusal basis. Accordingly, HKT does not agree to any spectrum re-auctioning being opened to any parties other than the existing 3G Spectrum holders.

98. The Authorities have repeatedly stated that the Hong Kong mobile market is already extremely competitive. The Authorities have also stated in paragraph 48 of the Consultation Paper that, in order for a new operator to roll out a territory wide network, it would need to acquire a total of 2 x 20 MHz of the re-auctioned spectrum. That means a single new entrant would need to outbid all of the four incumbent 3G Spectrum holders and acquire all of the spectrum on offer. But this would also

mean that the four incumbent operators would each be left with 2 x 10 MHz of spectrum, an amount which would create substantial service continuity problems along with less competition, investment and innovation. As noted above, further sub-dividing the 3G Spectrum would fragment the spectrum band, lessen the existing economies of scale and produce inefficient results contrary to the public interest.

99. In addition, the existing 3G Operators are already facing a shortage of spectrum so it would not be appropriate to dilute their spectrum holdings even further.

Question 4: What are your views on setting the auction reserve price at a relatively high level in order to forestall bid shading behaviour?

HKT's response

100. It is not clear from paragraph 63 of the Consultation Paper how high the CEDB intends to set the auction reserve price, other than it intends to pitch it:

[...] at a level that will be significantly higher than the reserve price set for all the spectrum auctions in the past.

101. HKT does not understand the reference to bid shading behavior. HKT is unaware of any bid rigging or other inappropriate bidding behavior in the past. It is therefore difficult to comment on the specifics of the CEDB's proposal. However, setting a very high reserve price immediately contradicts the stated aim of setting an auction reserve price that is:

*[...] indicative of the true minimum value of the Re-auctioned Spectrum.*²⁰

102. In fact, setting a high reserve price may have the opposite effect of deterring potential operators from taking part in the auction and not allowing a market-based solution. The purpose of a reserve price is not to try to guess the final price or market value. The purpose is to discourage non-serious bidders. Such prices should be set conservatively (i.e. low). In a competitive market such as Hong Kong, reserve prices can be set as a low/minimum safety net and thereafter the market will determine the final price.

103. Accordingly, HKT cannot agree to setting a high minimum reserve price without basis simply because the CEDB speculates as to some bid shading behavior or desires to discourage operators from adopting a certain bidding strategy. Given that this is only the starting price for the spectrum auction, any reserve price should be properly calculated to reflect only the costs of administering the spectrum, which are quite low. Certainly, past reserve prices can be used as a reference.

Question 5: Do you have any views on the proposed SMRA auction format?

HKT's response

104. The SMRA auction format is the tried and tested format for past spectrum auctions in Hong Kong and all the major operators should be familiar with how it works. On this basis, HKT agrees that if there is to be a spectrum auction then the SMRA format should be adopted.

²⁰ Paragraph 63 of the Consultation Paper.

Question 6: Do you agree that there should be no spectrum cap imposed if all the incumbent 3G operators exercise the right of first refusal to acquire two-thirds of their original frequency holding and 2 x 20 MHz of spectrum will be put out for re-auction?

HKT's response

105. If 2 x 20 MHz of spectrum is being made available, and there are no spectrum caps imposed, then there is a possibility that an operator may be able to acquire all of the spectrum under the auction and end up with twice as much 3G Spectrum as the other operators. This may have anti-competitive consequences.

106. On this basis, HKT suggests that a spectrum cap of 2 x 10 MHz be imposed on bidders participating in the auction.

Question 7: Do you agree that a spectrum cap should be imposed if the amount of spectrum to be put out for re-auction amounts to 2 x 40 MHz or more with some of the incumbent 3G operators deciding not to exercise the right of first refusal?

HKT's response

107. HKT agrees that if an operator is given the opportunity to hold more than 2 x 20 MHz of 3G Spectrum then this may have an adverse impact on competition, i.e. it may encourage spectrum hoarding, especially since 2 x 20 MHz of spectrum is sufficient to offer a territory-wide service in Hong Kong.

108. In addition, connected parties should only be permitted to submit one application to participate in the spectrum auction, as in past auctions of sizable spectrum amounts.

CONCLUSION

109. This exercise should not be about money (but unfortunately it is). It is estimated that the scheme favoured by the Authorities will move about \$10 billion from the pockets of consumers to the Government's coffers. It apparently does not matter that the Government has more than adequate reserves. The Government is apparently indifferent of mobile bills increasing by \$30 to \$50 per month.

110. It also appears that the Authorities favour an approach that will only benefit China Mobile.

111. The Authorities admit that their proposed scheme under Option 3 will produce substantial long term service degradation for customers. The Authorities calculate this to be 18%. HKT believes the figure could be much closer to 40% and could be as high as 70%, depending on what assumptions are adopted. Calls will be dropped or blocked, data speeds will decline, network congestion will increase and substantial network degradation will occur. The fact is that this substantial harm to users and the economy is totally avoidable if Option 1 is selected. The Authorities' favoured Option 3 will also lessen investment and innovation incentives, reduce competition levels and decrease spectrum efficiency.²¹

²¹ China Mobile in its 30 July 2012 Supplemental Submission argued that Article 118 of the Basic Law required that it be given a chance to bid for spectrum. China Mobile's reading of Article 118 is incorrect. Indeed, China Mobile has turned the Basic Law on its head. Article 118 and other Basic Law provisions strongly support Option 1. Article 118 requires the Government to "*provide an economic and legal environment for encouraging investments, technological progress and the development of new industries.*" Only Option 1 provides the stable and predictable environment which encourages investment and innovation. An approach such as



112. Option 1 best serves the interests of consumers in terms of customer service continuity, efficient spectrum utilization, effective competition, investment and innovation. Option 1 coupled with spectrum trading, indefinite licences and a reasonable level of SUF is the best way forward.

Submitted by
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Option 2 or Option 3 which creates uncertainty and discourages investment and innovation is not consistent with Article 118.