Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band

Upon Expiry of the Existing Frequency Assignments

For 3G Mobile Services

SmarTone's Response to

the Second Consultation Paper of 28 December 2012

1) As indicated in the Second Consultation Paper the Government has, guided by the 2007 Spectrum Policy Framework, reduced three alternative Options to two. These are Option 1: an administratively-assigned approach and Option 3: a hybrid between administratively-assigned and market-based approach. However, based on the 2007 Spectrum Policy Framework and the First Consultation Paper's stated objectives to ensure customer service continuity, efficient spectrum utilisation, promotion of effective competition and encouragement of investment and promotion of innovative services, SmarTone contends that Option 3 must be rejected for the same reasons as Option 2 and that Option 1 is best suited to meet the needs of the Hong Kong market – consumers and operators alike.

2007 Spectrum Policy Framework

2) A key tenet of the 2007 Spectrum Policy Framework is that a market-based approach will be used for spectrum wherever there are likely to be competing demands from providers unless there are overriding public policy reasons to do otherwise. The Government saw fit to reject Option 2 due to overriding public policy reasons i.e. potentially severe and long-lasting effect on service quality and reception. We contend that Option 3 must also be rejected for the same reasons, as we will explain further below.

Ensuring Service Continuity

3) Option 1 will not cause any disruption in service quality while the Government has calculated that under Option 3 an 18% reduction in service quality will occur. This is in itself an unacceptable decline for a supposedly world class commercial and financial centre, and would surely constitute an overriding public concern in respect to service continuity and quality.

4) What is more, it is disingenuous for the Government to suggest that this so-called 18% reduction in capacity will only result in an 18% reduction in speed. In fact, the impact on customer experience is far worse due to congestion resulting from reduced capacity and increased interference. Customers may be unable to access voice and data services and will experience more dropped calls, bad voice quality, in addition to a reduction in data speeds that is likely to exceed 18%.

5) We further contend that the 18% reduction in capacity has been incorrectly estimated and has therefore been grossly understated, due to over simplification and inaccuracies in the Government's analysis.

- The Government has assumed that all spectra, whether used for 2G, 3G and 4G are homogenous. This is clearly not true as different technologies are used for different spectra and are not interchangeable so spectrum utilisation efficiency will vary across different spectra as a result. Furthermore, customer adoption of technologies is dependent on myriad variables including device availability, style, inbound roamer handsets and others – rendering homogeneity a wholly theoretical construct unsupported by reality or facts.

- With one third of available 3G spectrum removed and in trying to mitigate the consequent ill-effects, incumbent 3G operators must carry out cell splitting, site densification and adopt any alternative technologies that may become available. All this will have to be completed before October 2016, and that this wasteful increase in costs will have been incurred well before October 2016. Furthermore, the Government has chosen to ignore critical service quality issues that are incapable of being resolved through the means above.

    - In busy areas such as Central, Causeway Bay and Mong Kok, site-to-site distances are already less than 100 metres. Materially increasing site density will be impossible since that will cause severe interference and result in congestion and service degradation. Any new technologies on the horizon that can potentially help to mitigate this further would not be ready for service by 2016.

    - The MTR is a major area where service degradation will occur. Network expansion inside the MTR, which is already under heavy load, will take a great deal of time. Increasing capacity materially

within the MTR will require a complete redesign and upgrade of the entire system, which will go way beyond 2016.

- The 2300MHz and 2600MHz spectrum are not supported by MTR systems. A new system design and implementation to cater for these frequencies will be required. This will not be possible before 2016. Again, this demonstrates that the Government's assumption of spectrum homogeneity is clearly misplaced.

- The Government rejected Option 2 as the reconfiguration of IRS systems (as used in the airport, Exhibition Centre and commercial buildings) would require labour-intensive on-site retuning and hardware reworking, resulting in a severely degraded mobile service indoors. Under Option 3, the same level of market-wide retuning and reworking will be required. It is therefore inexplicable that the Government would consider Option 3 as feasible when it has rejected the same in Option 2.

- 3G networks will continue to be highly trafficked in 2016 therefore a reduction in available 3G spectrum by one third, combined with the above factors, will cause a service degradation of more than 33% - far more than the Government's estimate, and these adverse impacts will last well beyond 2016.

- SmarTone would obviously invest to mitigate the impact of any spectrum reduction but is fearful that much of the negative impacts of spectrum reduction as stated above will remain for quite some time. Furthermore, Government mandated wasteful industry-wide investment will raise costs substantially for all operators. It is hard to see how a combination of increased costs and degraded service levels will contribute positively to the economy or act in the best interests of the Hong Kong consumer, whichever way one looks at it.

6) At the LEGCO panel meeting on 27th March 2013, the Government conceded that it would appoint an independent international consultant to conduct a proper impact analysis on service quality loss. It is surprising that the Government has gone through two rounds of consultations without seeking independent verification of this critical factor. Furthermore, its suggestion at the LEGCO panel meeting to release the results of the consultancy study in October 2013 at the same time as it makes its frequency re-assignment decision is wholly inappropriate and irresponsible. This consultancy study is vitally important as it should clearly define possible service impacts on consumers. As such, industry

stakeholders should have the right to participate in the selection process of the consultant including the definition of the scope of work, the areas that must be considered, and the deliverables of the consultancy study. Once completed, the consultancy study should be released for further public consultation prior to any decision making. Hastiness is no substitute for good policy.

Efficient Spectrum Utilisation

7) The Government asserts that a contiguous 2 x 20 MHz of spectrum is required for optimum LTE-Advanced services and therefore incumbents with only 2 x 15 MHz of contiguous spectrum are unable to provide optimal LTE-Advanced services or achieve peak data download speeds. For this reason it concludes that Option 1 falls short of meeting spectral efficiency enhancement objectives. These assertions are fundamentally incorrect as LTE-Advanced technologies are designed specifically to achieve the same spectral efficiency and peak data rates as contiguous spectrum blocks using non-contiguous spectrum. It is inexplicable why the Government attempted this fallacious assertion in the first place.

8) Option 3 is likely to create significant spectrum fragmentation due to spectrum shuffling and division to meet the needs of a new player(s) in Hong Kong's mobile industry. While the Government justifies its choice of Option 3 by stating that it can provide the opportunity for an operator to acquire 2 x 20MHz of spectrum, it neglects to mention that this will result in all others holding only 2 x 5 MHz or 2 x 10 MHz of fragmented spectrum, resulting in lower overall efficiency for the industry as a whole. In this light, Option 1 is actually more capable of providing greater spectrum efficiency than Option 3. By failing to take this into account, the Government has gone against its principle of promoting efficient spectrum utilisation which should take into account the big picture of the market as a whole.

Encouragement of Investment and Promotion of Innovative Services

9) Under Option 1, investment in network and services will continue, however much of the investment following from Option 3 will be largely wasteful investment that serves only to mitigate the adverse effects of spectrum loss. This will drive up costs and ultimately, the pressure to pass on these costs to the consumer will rise accordingly.

10) It has been argued that depriving an interested party of the chance to bid for spectrum (and thereafter investment) is a clear violation of Article 118 of the Basic Law. However, Article 118 of the Basic Law is a general statement and we do not believe it has any direct relevance to Options 1, 2 and 3 as proposed by the Government. We cannot believe that the Government's 2007 Spectrum

Policy Framework could possibly contravene the Basic Law from which Options 1, 2 and 3 are derived. It is disingenuous for the Government to imply that Option 3 complies while other options do not.

11) The Government perpetuates the misconception that innovative services only come from ever higher speeds. This is incorrect. Efficient spectrum utilisation and sophisticated speed and capacity management are far more important for the mass adoption and enjoyment of new and innovative services. To wit, popular and innovative services in recent years including Facebook, WhatsApp, WeChat, WeiBo and SmarTone's own X-Power and Call Guard do not require high speeds. History has shown that meaningful innovation rarely, if ever, requires very high speeds. If speed is in itself an objective, then the Government should allocate bigger blocks of spectrum to everyone. Paragraph 14 below points the way to how this can be achieved.

Promotion of Effective Competition

12) Hong Kong is already an open and competitive market and anyone can join in, with new entrants able to join through mergers and acquisitions, as an MVNO, or through the acquisition of new spectrum in auctions. China Mobile has participated in the Hong Kong market using all of the above means. China Unicom, an existing MVNO, has also participated unsuccessfully in the recent auction of new 2600MHz spectrum. We do not understand how the Government can say that only Option 3 will allow for greater competition by allowing a new entrant into the market.

13) We clearly do not object to increased competition in Hong Kong or to new entrants in the industry, but this should be made possible through the auctioning of new spectrum. Competition should not come through interfering with already efficiently utilised spectrum. This approach is adopted in all countries with advanced world-leading regulatory authorities including, the USA, Canada, the United Kingdom and Australia.

14) There is an additional 125 MHz of spectrum that can be used for 3G/LTE services, namely the digital dividend spectrum of 2 x 45 MHz which is currently being used for TV broadcasting and the 35 MHz of TDD spectrum in the 1900-2000 bands [Appendix 1]. Hong Kong currently lags behind other markets [Appendix 1] in the freeing of new spectrum for mobile use and must surely catch up where it really matters.

Spectrum Utilisation Fee

15) As well as a discussion on spectrum allocation, the Second Consultation Paper has made two proposals for developing SUF for Option 3 but no proposal was made for Option 1. SmarTone considers Option 1 to be the only sensible option, and proposes that the SUF for Option 1 should be determined by an independent international consultant with reference to international benchmarks, Hong Kong's past bidding results, relative pricing of different frequency bands and time value of money. This exercise will be transparent, fair and reasonable, and the value of the spectrum so derived will make Hong Kong internationally competitive as well as foster its development as an advanced service based, knowledge oriented economy.

16) In regards to the proposals for Option 3, both proposals are unacceptable as they require incumbents to commit to an unknown price that is dependent on bidding results. This is unreasonable and unfair to incumbent operators.

Conclusion

17) As Option 2 has already been rejected in light of potentially severe and long-lasting effects on service quality and reception, then the same conclusion must be drawn with Option 3. While the Government believes Option 3 can meet competing demands on the 3G spectrum with an acceptable level of service disruption, SmarTone contends that service disruption resulting from it has been grossly underestimated and must insist that a properly constituted consultancy study take place, with the participation of industry stakeholders, and that the results are released for further public consultation prior to any decision. SmarTone is confident that its contentions will be vindicated.

18) We strongly urge the Government to reconsider the ill conceived selection of Option 3. Option 1 is the only sensible option and the only one truly capable of meeting the requirements of the 2007 Spectrum Policy Framework and the objectives of ensuring customer service continuity, efficient spectrum utilisation, promotion of effective competition and encouragement of investment and promotion of innovative services.

11 April 2013

Appendix 1: Available New Spectrum

1. Additional spectrum can be made available from the release of the digital dividend spectrum currently used for TV broadcasting. We set out below current spectrum usages which can and should be re-allocated for 3G/LTE services.

3GPP band	Frequency band (MHz)	Bandwidth (MHz)	Remarks
Band 28	703-748 / 758-803	45 x 2	Currently used for analogue & digital TV broadcasting
Band 33	1900-1920	20	15MHz is assigned to existing 3G operators (SmarTone, CSL and PCCW) and can be made available by October 2016
Band 34	2010-2025	15	5 MHz is assigned to an existing 3G operator (3HK) and can be made available by October 2016
Total		125	There will be 90MHz FDD in Band 28 (according to APT700 band plan) and 35MHz TDD in Bands 33&34

2 Many countries have either made the digital dividend spectrum available or will do so soon.

Country	Spectrum auction / assignment date
Canada	Q4 2013
Taiwan	Q4 2013
New Zealand	Q3 2013
Australia	April 2013
UK	February 2013
Finland	January 2013
Netherlands	December 2012
Czech Republic	December 2012
Ireland	November 2012
Romania	September 2012
Croatia	September 2012

Country	Spectrum auction / assignment date
Denmark	June 2012
Japan	June 2012
Switzerland	February 2012
France	December 2011
Portugal	December 2011
Italy	September 2011
Spain	July 2011
Sweden	March 2011
Germany	May 2010
USA	March 2008

Sources: The web site of GSMA and that of regulators of individual countries.