



Submission to the Legislative Council Panel on Information Technology and Broadcasting

Report on "Spectrum licence reassignment in Hong Kong – the case of the 1.9-2.2GHz band"

By Plum Consulting

Executive Summary

Introduction

Plum Consulting was commissioned by the incumbent 3G licensees to review the proposals in OFCA's two consultations on the "Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz¹ Band upon Expiry of the Existing Frequency Assignments for 3G Mobile Services"². Plum Consulting has carried out an independent appraisal of the technical and economic consequences of the arrangements proposed by OFCA and critically examined the basis for establishing the Spectrum Utilisation Fee (SUF) for right of first refusal spectrum for the incumbent 3G licensees.

Plum's appraisal concluded that:

- Option 1, where incumbent 3G licensees would have the right of first refusal on all their current 3G spectrum, best meets the needs of the Hong Kong market with the least disruption of services to consumers at a time when mobile data traffic is growing rapidly.
- Option 3, where incumbent 3G licensees would be deprived of some of their current 3G spectrum risks causing harm to consumers, significant disruption costs and adverse impacts on competition.
- The proposed values for the SUF for right of first refusal spectrum are much too high. OFCA's estimates are more than four times the values suggested by relevant international benchmarks.

With the rapid growth in mobile data traffic forecast for the next 5 years, any policy changes that disrupt Hong Kong's ability to serve mobile data demand will be damaging to consumers and Hong Kong's reputation as an advanced communications hub.

The case for Option 1

OFCA states in its second consultation that its proposed choice for assignment on expiry of 2.1 GHz Spectrum is Option 3, where 3G licensees would have right of first refusal to 2x10 MHz of their current 2.1 GHz spectrum³. Compared to Option 1, where incumbent 3G licensees would have the right of first refusal on all of their existing spectrum (i.e. 2 x 15 MHz), the adoption of Option 3 creates a risk of causing harm to consumers, potentially significant disruption costs for the incumbent 3G licensees and

¹ We refer to this radio spectrum as "2.1 GHz Spectrum".

² Consultations published on 30th March 2012 and 28th December 2012.

³ Under Option 2 the 3G Licensees would hand back all of their 2.1 GHz Spectrum and this would then be assigned by auction. Under Option 3 the 3G licensees would each have a right of first refusal to 2 x 10 MHz of their current 2.1 GHz Spectrum and each would have to hand back 2 x 5 MHz. The total spectrum handed back (i.e. 2 x 20 MHz) would then be assigned by auction.

dampening of competition. Option 3 would result in unnecessary investment by industry and these costs would be passed onto consumers.

Plum reviewed Options 1, 2 and 3 against four criteria – service continuity; encouragement of investment and promotion of innovative services; efficient spectrum utilisation; and promotion of effective competition. The review highlighted the following key points:

- **Service continuity:** OFCA correctly recognises that only Option 1 preserves service continuity with minimum risk. Option 3 reduces an operator's spectrum holding, which will result in a loss of capacity and therefore congestion for consumers using 3G services. Substantial traffic congestion and service degradation for consumers in a services economy should obviously be avoided. Option 3 will require:
 - Migration of customers from the deprived 2.1 GHz Spectrum to other services and/or spectrum blocks, but such services may not be desired and blocks may then also become congested.
 - Significant network re-engineering to maintain quality of service where possible, which represents inefficient investment.
 - A shift of resources to managing the challenges of implementing Option 3, which represents wasted and inefficient use of resources.
- **Encouragement of investment and promotion of innovative services:** Option 1 is most likely to foster an environment where investment and innovation occur effectively. Option 3 will create uncertainty for the incumbent 3G operators until the auction takes place. They will be faced with having to factor into all their strategic activity the prospect that a third of their 2.1 GHz Spectrum will be lost, which in turn could inhibit operators from investing and competing as aggressively as they could have done under Option 1.
- **Efficient spectrum utilisation:** The development of mobile services in Hong Kong, the intense competition which OFCA acknowledges exists and the growth of mobile data traffic all suggest that the usage of 2.1 GHz Spectrum in Hong Kong is efficient. We note that OFCA in both its consultations does not present any concrete evidence to the contrary. Indeed, spectrum fragmentation through the creation of additional spectrum blocks out of the existing 3G blocks could result in less efficient spectrum utilisation.
 - If OFCA wishes to reassure itself that the spectrum is used efficiently then it should examine the current utilisation of 2.1 GHz Spectrum and how this will change in the period to 2016 taking account of likely mobile data traffic growth. If this analysis has already been performed the results should be made available.
- **Promotion of effective competition:** The Hong Kong market is already fiercely competitive. Both consultations recognise this. It is unclear to us that further entry into the 2.1 GHz Spectrum band for provision of 3G services will create a positive economic benefit given the already intense competition between 3G operators; it is more likely that benefits will flow between operators in such a situation and that any benefits will be outweighed by disruption costs.

Spectrum utilisation fee

OFCA proposes in the second consultation paper two new methods of calculating the SUF for the right of first refusal spectrum, both of which give values that are too high. This is because of deficiencies in the way OFCA has chosen benchmarks and the calculation methodology used to derive values.

Where OFCA has based the SUF on the final year payment for the current 2.1 GHz licences:

- OFCA has not recognised that the final year payment for the 2.1 GHz licences is likely to overstate the annual value of spectrum over the current 15 year licence period⁴.
- OFCA has not used the normal accounting and economic practice of discounting future values when calculating an equivalent lump sum value for the SUF in 2016.
- OFCA has not taken account of the fact that the 3G operators were awarded 5MHz of TDD spectrum, as well as the FDD blocks, in 2001.

Where OFCA has based the SUF on past auctions in Hong Kong for 850/900 MHz and 2600 MHz:

- OFCA has not taken due account of the characteristics of different frequency bands when using historic Hong Kong benchmarks and so has overestimated the value of the 2.1GHz band.

Neither of the methods presented by OFCA take account of relevant international benchmark values.

The net result is that OFCA's estimates of the value of the 2.1 GHz Spectrum are more than double the value justified by a proper assessment based on the current 3G SUF payment schedule and up to four times the value suggested by relevant international benchmarks.

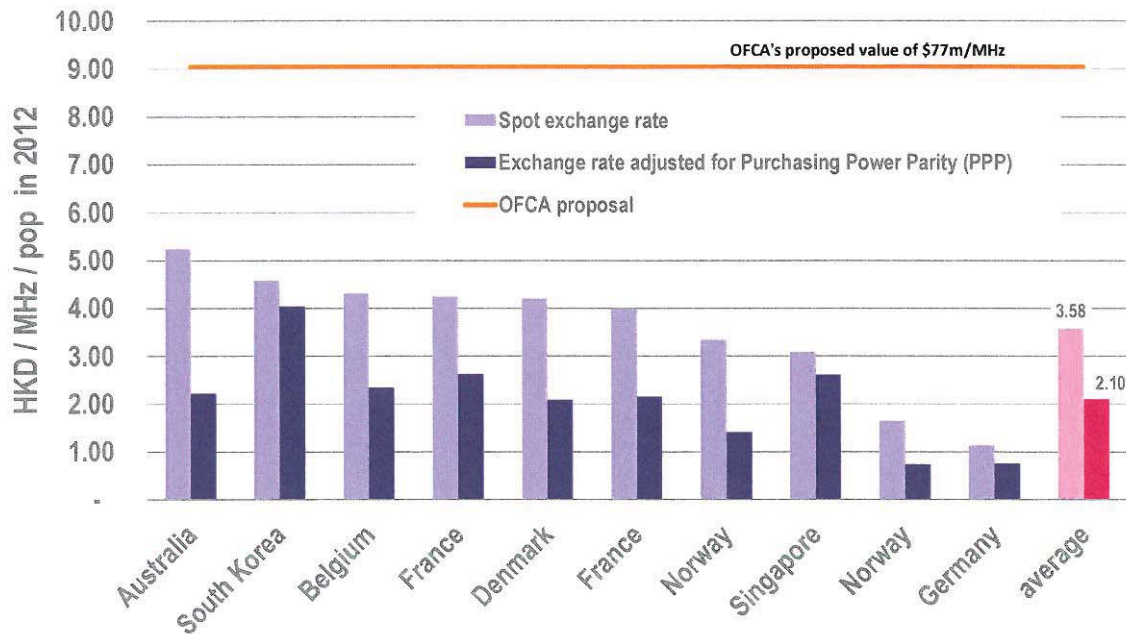
To set an SUF for the 2.1 GHz Spectrum, ideally recent Hong Kong benchmarks would be used; however, these apply to different bands with different characteristics from the 2.1 GHz Spectrum and give a very wide range of values from \$5m/MHz (2.3 GHz in 2012) to \$108m/MHz (900 MHz in 2011). The 2.1 GHz Spectrum market value should fall within this range but the Hong Kong benchmarks alone do not provide sufficient guidance. In particular, it is generally the case that spectrum in the lower bands, say below 1 GHz have greater value than higher bands and therefore overstate the value of 2.1 GHz spectrum.

Regulators elsewhere have made use of international benchmarks to form their view of the market value of spectrum and to set reserve prices in auctions (e.g. in Australia, Greece, Ireland, New Zealand and the UK). Using recent auction prices for 2.1 GHz Spectrum in high income countries provides a good guide to where values should be set in Hong Kong as shown in Figure 1. The average value from these auctions equals \$17m/MHz in 2016 prices⁵.

⁴ The final year payment is the last in a series of steadily increasing SUFs set at the time of the auction in 2001. There is no evidence values are increasing over time (in nominal or real terms) and so this value cannot be said to provide a good indicator of future value or be representative of the average SUF paid over the licence period.

⁵ Assuming Purchasing Power Parity exchange rates, population of 7m, and inflation of 3.5% p.a. from 2012 to 2016.

Figure 1: Value of 2.1 GHz Spectrum auctions in high income countries



Note: Values have been normalised to 15 year licence duration.
 Source: Plum Consulting, Regulators' websites

Taking the two sets of evidence together (i.e. the Hong Kong benchmarks and international benchmarks) we recommend that a value of \$20m/MHz is applied as an SUF for the right of first refusal spectrum in Hong Kong rather than OFCA's proposed value of \$77m/MHz.

In summary, our view is that Option 1 is a substantially preferred choice that meets the requirements of consumers and the Hong Kong economy. With regard to SUF for 2.1 GHz Spectrum, a reasonable and fair price based on appropriate and global benchmarks should be adopted.

20 March 2013