

ZTE's Comments on "Arrangements for the Frequency Spectrum in the 900 MHz and 1800 MHz Bands upon Expiry of the Existing Assignments for Public Mobile Telecommunications Services and the Spectrum Utilization Fee"

Introduction

As one of the major contributors for the last decades in Telecom Industry, and one of the stakeholders of Hong Kong, ZTE is honored to present its views and comments on the 2nd consultation paper issued by Commerce and Economic Development Bureau (Communications and Creative Industries Branch) and Office of the Communications Authority on 14 February 2017.

Key Comments

1. ZTE agreed with the option of hybrid spectrum arrangement, the Communications Authority should choose **the most appropriate ratio between RFR spectrum and Auction spectrum which would best meet the four identified objectives in spectrum management.**

- (a) Ensuring customer service continuity;
- (b) Efficient spectrum utilization;
- (c) Promotion of effective competition;
- (d) Encouragement of investment and promotion of innovative services.

2. **Encourage appropriate competition but not over competition for converged ICT market.**

Hong Kong only has 7.37 million populations but there are four incumbent MNOs and 29 MVNOs in the telecom market. Till now the mobile penetration is higher than 230%, the competition in mobile communication is pretty fierce, not to mention the growing service impact from OTT players, almost all the incumbent MNOs are suffering slow revenue growth and decline of profit. ZTE accept that appropriate competition is necessary for the ICT market, while over competition might harm all the players and will bring risk of service continuity and quality of service. Whether new entrants can encourage competition is doubtful that objective (c) may not be served. So the quantity of new entrants of MNO should be minimized and so as the spectrum reserved for public auction.

3. **Maximum the continuous spectrum block will be good for the final usage of spectrum and the continuous optimization of network TCO.**

With the step by step subscriber migration from 2G to 3G and 4G, the incumbent MNOs have re-farmed part of the 900M and 1800M spectrum as UMTS or LTE spectrum, which

obviously improve the efficiency of spectrum. Within a decade, the majority spectrum in 900M and 1800 will finally be used as LTE service and even for 5G New Radio. So the spectrum allocation should consider the final usage of these resource in the 15 years' timeframe, and maximum the allocation of continuous 20MHz or 15MHz blocks (it is difficult for most of the commercial 4G terminal to support carrier aggregation of multiple fragmental carriers), otherwise the spectrum will become too fragmental, which is not good for the continuous improvement of access speed and the optimization of network TCO.

4. **Renewal most of the spectrum in 900MHz and 1800MHz to the incumbent MNOs is the best way for the Efficient utilization of spectrum, Ensuring customer service continuity and Encouragement of investment and promotion of innovative services.**

In the highly competitive market of Hong Kong, with the rapid growth of data traffic and scarcity of spectrum in 900MHz and 1800MHz, there is no reason for the incumbent MNOs to use the spectrum inefficiently, the clear evidence of operators re-farming their spectrum to UMTS and LTE demonstrate the spectrum is indeed being used efficiently. On the contrary, a high price auction of over 60 percent of spectrum may even reduce spectral efficiency. Just imagine if the incumbent MNOs with the mature network infrastructure could not use the spectrum anymore and the new entrants who paid expensive cost for the spectrum license could not rollout its network within the 3 years' timeframe..., the case of someone who successfully bid for the spectrum but ended up not yet utilizing the spectrum should not happen anymore.

In addition, if the MNOs could not get the spectrum they need at auction, it will severely affect the service continuity of 2G/3G services for local users, MTR lines and inbound roamers, such spectrum loss risk would also reduce the ability and incentive of incumbent MNOs to invest and innovate in new services. Also, the re-assignment through auction may result in the MNOs acquired new spectrum different from previous one. It will result in a lot of additional engineering works and unnecessary network investment.

5. **Create level-playing field for all MNOs.**

Regarding the reallocation of spectrum and percentage for auction, ZTE suggests RFR 2x5Mhz on 900Mhz & 2x15Mhz on 1800Mhz for each incumbent MNO. And All MNOs need to keep the existing 1800Mhz band unchanged in order to keep non-service interruption during spectrum handover. MTR & IRS's POI configuration should not be changed.

In this suggestion, a good balance between block size and block quantity is achieved, 80 percent of 900MHz and 1800MHz spectrum are "RFR Spectrum", which satisfy all of the objectives stated in the Consultation Paper; 20% of 900MHz and 1800MHz spectrum are reserved for auction, which set aside the extra block which is difficult for equally sharing and encourage appropriate competition among the incumbent MNOs and new entrants.

900MHz spectrum has better coverage and was assigned by OFCA in the very beginning to

HKT, HTHKH and SmarTone, clearly it's not fair for China Mobile Hong Kong. The reallocation suggestion assign 2*5MHz block to each incumbent MNOs, which will create a level playing ground for the entire CT market. Under the policy of technical neutral, the 5MHz RFR block could be easily used for GSM, UMTS, LTE and later in-band or guard band NB-IoT service. The extra 5MHz is open for public auction, the final assignee could use it to deliver shared GSM roaming service, NB-IoT service or UMTS/LTE service.

The allocation of 1800MHz not only guarantee the equally sharing of spectrum amongst the four operators, it also maintain the possibility for new entrants or appropriate competition among these MNOs. Each incumbent MNO could acquire 20MHz spectrum through the auction of an additional 5MHz block. This solution would create a level-playing field amongst the operators in the supply of a scarce and essential "raw material", enable the proposed prior consolidation of spectrum to take place, and achieve all of the Consultation Paper's objectives.

ZTE agrees that the Auctioned Spectrum should be open for bidding by all interested parties, including the incumbent spectrum assignees and new entrants. Suppose all the 15MHz auction spectrum in 1800MHz was acquired by one new entrant, a choice of frequency swapping should be offered to MNOs in order to achieve one continuous 15Mz block spectrum for the new entrant.

6. **SUF in Hong Kong could be set to appropriate price.** From the following figures which source from GSMA <Effective spectrum pricing> publicized by Feb, 2017, We know that the global trends in spectrum prices and reserve prices per MHz pop of Hong Kong ranks the top level and far higher than the Average/Median price.

FIGURE 4: GLOBAL TRENDS IN SPECTRUM PRICES, BY BAND AND AUCTION, 2000-2016

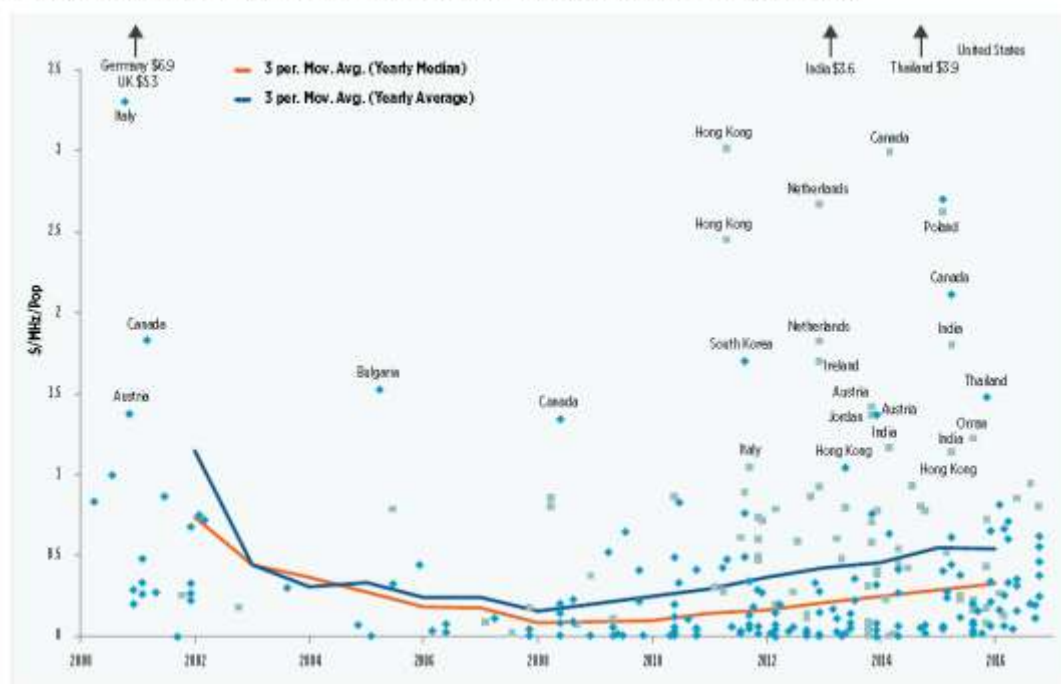
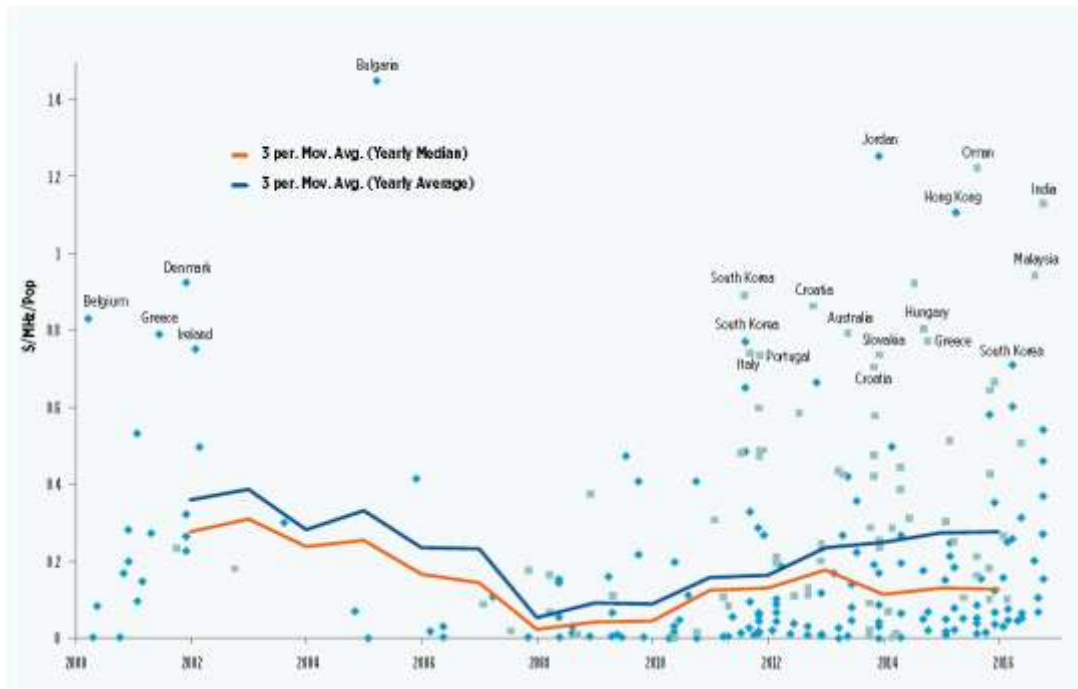


FIGURE 5: GLOBAL TRENDS IN SPECTRUM RESERVE PRICES, BY BAND AND AUCTION, 2000-2016



High SUF will influence the investment enthusiasm of affording innovative services for end users. The investment on new technology and services could be decided to abandon because the TCO is too high in which high SUF contributes a much larger proportion. To keep ARPU, MNOs could choose to provide the existing service quality only. The general public might not enjoy continuous advanced service experience comparing to other countries. It goes against the mobile communication market development of Hong Kong. Furthermore, High SUF might lead in the higher charge plan which is definitely harmful to mobile consumers and correspondingly harmful to the relevant Telecom and IT industry.

Conclusion:

From technical point of view, Maximum the continuous spectrum block will be good for the final usage of spectrum and the continuous optimization of network TCO.

Renewal most of the spectrum in 900MHz and 1800MHz to the incumbent MNOs is the best way for all the four identified objectives in spectrum management. ZTE prefer the following hybrid option:

- (a) 2 x 5 MHz of spectrum in the 900MHz band and 2 x 15 MHz of spectrum in the 1800 MHz band to be re-assigned to each of the four incumbent spectrum assignees through the offer of right of first refusal (“RFR Spectrum”). That is to say, a total of 2 x 80 MHz, i.e. 80% of the 900/1800 MHz Spectrum, to be offered as the RFR Spectrum;
- (b) The remaining 2 x 5 MHz of spectrum in the 900 MHz band and 2 x 15 MHz of spectrum in the 1800 MHz band to be assigned by way of auction. That is to say, at least a total of 2 x 20 MHz, viz. 40 MHz, or 20% of the 900/1800 MHz Spectrum to be auctioned.

As for the Spectrum Utilization Fee, ZTE suggests OFCA to lower the proposed SUF to the appropriate spectrum price level which will encourage the investors to provide more innovation services and contribute for a favorable ICT development environment of Hong Kong.

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