

Nokia's view on the OFCA consultation on the 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 Utilisation Fee

Nokia believes that the mobile industry needs to prepare for the continuation of dramatic mobile broadband traffic growth beyond 2020. This also calls governments and organizations to allocate spectrum to prepare for this growth. The spectrum allocations of 850MHz, 2.6GHz, 2.1GHz and 2.3GHz have paved a strong path for the growth. Nokia sees this traffic growth demand a key driver to utilize their spectrum in the existing 900MHz and 1800MHz spectrum allocation. Hong Kong is well-known of being challenging in terms of radio conditions and congestion, frequency spectrum resource is then the key to guarantee user experiences and cope with the massive traffic demand in the long run. If the network capacity is reduced while the technology evolution is seriously obstructed due to the reduced spectrum allocation, apparently, it is a technology obstacle to retain the user experience and achieve service continuity. Before finalizing the option for spectrum re-allocation, this has to be taken into consideration and thoroughly resolved. In finalization the allocation arrangement and methodologies the following factors should be considered:

1. Allocate the licenses to the most productive users who value spectrum licenses the most to achieve the public interest benefits goal. The incumbents of the license users definitely play a key role to ensure the end users and public interest without any major disruption associated with new players.
2. In terms of generating revenues for the public and government, the current operators are already the most productive users of the spectrum licenses because they have invested a lot in the networks and they are providing efficient services to the public.
3. Any potential chance of disruptions, due to uncertainty of future license holdings, to the current service providers' operations could adversely impact their network investments which would adversely affect network quality or performance and could potentially disrupt wireless services which are not in the public interest.
4. 900MHz and 1800MHz have been widely adopted for 3G and 4G services with minimum 2G services being maintained. In technology evolution towards LTE Advanced, LTE-A Pro services, spectrum resources are crucial to leverage the technology benefits. For example, providing massive mobile broadband experiences by means of LTE Carrier Aggregation technology require reasonable contiguous and wide spectrum resources. The proposed Option 3 obviously limit the evolution to a certain extent.
5. 900MHz and 1800MHz are extremely well-adopted for mobile broadband worldwide with excellent supply of ecosystem. Low band like 900MHz is well suited for coverage and indoor purpose. Effective utilization of these important spectrum resources is a must to ensure service continuation and improvement of key use

cases in MTR and hot spots. The investment and groundwork that incumbents spent over the last tens of years to fulfil would not be easily substituted by new players.

6. Spectrum Utilisation Fees (SUF) should not be set high. The high spectrum utilization cost to the operators could potentially be passed onto consumers as fees or raise the prices of current wireless services for consumers.

In the consultation paper, OFCA proposed three options for spectrum re-assignment for the 900 and 1800Mhz bands. The options are 1) Full-fledged administratively-assigned approach, 2) Full-fledged market-based approach, and 3) Hybrid administratively-assigned cum market-based approach. Based on the above, Nokia supports **Option 1** which will offer the current operators the priority of choosing to hold the current 900/1800Mhz spectrum.

In the past few years, network operators in Hong Kong have put significant amount of investments to make the best use of their spectrum. For the 900/1800Mhz bands, network equipment have been upgraded to support GSM, UMTS, and LTE. Nokia sees that the current operators are already the most productive users of the spectrum licenses because they have invested a lot in the networks and they are providing efficient services to the public. Keeping the spectrum for the current operators will give the most benefit for the consumers in terms services continuity.

In addition, the license renewal also provides operators with greater confidence and encourages them to continue to invest in network development and the deployment of new services knowing that the license will be renewed after the initial license period with little risk of losing the investment. This can be very important for the investments with long payback times such as mobile networks.