Global mobile Suppliers Association

Response to the consultation paper on Arrangements for Assignment of the Spectrum in the 600 MHz and 700 MHz Bands for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee issued by the Communications Authority and the Secretary for Commerce and Economic Development of Hong Kong

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GSA[1] response to the consultation paper on Arrangements for Assignment of the Spectrum in the 600 MHz and 700 MHz Bands for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee issued by the Communications Authority and the Secretary for Commerce and Economic Development

In this response to the *consultation paper on Arrangements for Assignment of the Spectrum in the 600 MHz and 700 MHz Bands for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee* (herein referred to as "the Paper") the GSA focusses on the technical issues associated with the frequency arrangements with a view to maximising the utility of the subject spectrum (and hence provide the greatest economic and social value). If the Communications Authority requires any clarification to this response, please do not hesitate to contact:

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[1] *The GSA (Global mobile Suppliers Association, https://gsacom.com) develops strategies and plans, and contributes studies and technical analysis to international, regional and individual country policymakers and regulators to facilitate the timely availability of spectrum for use by mobile network operators. GSA has a focus group for spectrum topics for technical and regulatory matters of radio spectrum pertaining to the successful evolution of International Mobile Telecommunication (IMT) and associated radiocommunication systems and comprises a team made up of spectrum and regulatory affairs specialists from GSA Executive Member and GSA Member companies. In addition, GSA reports regularly on global spectrum developments.*

Introduction

The GSA is pleased that the Communications Authority is considering the 600 and 700 MHz bands in order to provide additional spectrum for the delivery of public mobile services including 5G services. The eventual licensing of this low band spectrum will complement the mid band (< 7 GHz) and high band spectrum (> 24.25 GHz) that has already been released and is being used for 5G services. The low band spectrum is particularly suited for wide area coverage and facilitates the deployments of low cost low power massive machine type communications such as sensor networks.

Increasing demand for WBB services

The demand for WBB services in increasing.

During 2020 the coronavirus pandemic (COVID-19) forced an unprecedented number of people all over the world to change their workplace from office to home and become accustomed to new routines in their daily lives. As new digital behaviours are formed, the critical role of communications service providers to support a functioning society with flawless digital communication capabilities in times of crisis has become apparent.

As people spent more time online at home, network traffic loads shifted geographically from city centres and office areas to suburban residential areas. The largest share of the traffic increase as lockdowns went into place was absorbed by the fixed residential network, but many service providers also experienced an increased demand on the mobile network.

Looking forward, over 70 percent of the global population will have mobile connectivity by 2023 and the total number of global mobile subscribers will grow from 5.1 billion (66 percent of population) in 2018 to 5.7 billion (71 percent of population) by 2023.[2]

5G devices and connections will be over 10 percent of global mobile devices and connections by 2023. By 2023, global mobile devices will grow from 8.8 billion in 2018 to 13.1 billion by 2023 – 1.4 billion of those will be 5G capable.[3]

It is clear that there is global demand for 5G services and to meet the demand 207 operators hold licenses issued for 5G bands worldwide - between them they hold more than 310 licenses to use 5G spectrum bands[4].

Question 1: Do you have any views on the proposed changes of frequency allocation to mobile service for the entire 614 – 806 MHz band?

[2] Cisco Annual Internet Report (2018–2023) White Paper, CISCO March 2020
[3] ibid
[4] 5G Spectrum September 2020 Snapshot, Global Mobile Suppliers Association 2020

GSA welcomes the proposed changes to the 600 and the 700 MHz bands and agrees with the Communications Authority that the "do nothing" option (i.e. leaving the vacated spectrum unused) does not lend itself to efficient use of the spectrum.

In 700 MHz, mobile services can be substantially enhanced quickly utilising the very wide available 3GPP Bands 28/n28 ecosystem, offering 2x 45 MHz FDD spectrum for wide-area 4G and 5G services. GSA also welcomes considering the 600 MHz bands where with 3GPP Bands 71/n71 a widely supported ecosystem exists. In 2017 an APT Report (#79) was approved that supports the 3GPP Band 71/n71 arrangement. This arrangement can be introduced today since equipment and ecosystem is available. At the APT Wireless Group meeting September 14-18, 2020, a proposal was made to ensure that band 71/n71 and APT700 bands 28/n28 can be introduced in a spectrum efficient way together and AWG decided to study this onwards while bearing in mind that this does not exclude band 71/n71 at the present time.

As noted by the Communications Authority the long-range radio propagation characteristics of the 600 and 700 MHz bands are particularly well suited for providing mobile coverage to wide areas and indoor locations. The GSA notes further that these bands are less impacted by building attenuation and so are suited to outdoor to indoor coverage too. So the starting point for developing technical conditions for these bands should be to allow outdoor operation as proposed for the 700 MHz band. Territory wide operation using the 600/700 Mhz bands supports the mobile network operators ("MNOs") desire to access spectrum for cost efficient provision of wide area network coverage of mobile services (para 15, of the consultation document).

The Communications Authority notes the Mainland will continue to use the 600 MHz band for broadcasting purposes, and hence Hong Kong can deploy the band for indoor mobile telecommunications use without harmful interference. In this regard GSA acknowledges the needs to protect broadcast outside Hong Kong and thus the proposed limitation to indoor use, but would like to point out that UHF spectrum is best suited for outdoor, wide-area mobile services.

Question 2: Do you have any views on assigning the spectrum in the 600/700 MHz bands by way of auction and allowing all interested parties to apply for participation in the auction?

GSA does not intend to comment on specifics of the assignment procedure, but would like to point to the necessity to make spectrum available to operators in an affordable manner not unduly reducing their possibilities to invest into the required infrastructure and network rollouts enabling the use of additional spectrum. GSA believes that the socio-economic benefits of affordable spectrum allowing for fast and wide rollout of networks and early access to the new services for businesses and consumers by far outweigh the short-term benefits of high auction proceeds. GSA's answer to this question applies to questions 4, 5, 6 and 7.

Question 3: Do you have any views on the proposal that the spectrum in each of the 600 MHz and 700 MHz bands be divided into seven frequency blocks each with a bandwidth of 2 x 5 MHz?

GSA supports 5 MHz block bandwidth coupled with the Communications Authority's technology neutrality policy as 5 MHz is the granularity of carrier bandwidth in 3GPP 3G / 4G / 5G technology. 5 MHz blocks and multiples thereof thus lead to best possible spectrum efficiency and allow a variety

of use-cases from low duty cycle sensor networks in support of the internet of things, as well as more data intensive use-cases, especially as the Communications Authority proposes to allow a single bidder to gain 2 x 15 MHz of FDD spectrum.

The GSA notes that the Communications Authority intends to pair the 703 – 738 MHz range with 758 – 793 MHz i.e. 2 x 35 MHz, however the 3GPP band 28/n28 arrangement (and the APT harmonized frequency arrangement[5]) pairs 703 – 748 MHz paired with 758 – 803 MHz. There is alignment of the Communications Authority's plan with the lower frequency edge, and duplex spacing with 3GPP band 28/n28 and this should be maintained. The GSA encourages the Communications Authority to make the full 2 x 45 MHz available to maximize the economic opportunity and maximize spectrum efficiency.

Conclusion

The GSA thanks the Communications Authority for its open, consultative approach towards allocation of further low-band spectrum. In this paper the GSA provides information to show that there is demand for this spectrum to meet the varied use-cases, environments and business models that 5G enables.

The GSA prefers that the entire 3GPP band 28/n28 and band 71/n71 are made available for outdoor use.

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[5] APT/AWG/REC-08 APT Recommendation on Frequency Arrangement for the Implementation of IMT in the Band 698-806 MHz