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Our Reference No.: APSCC/1877  
Date: 2018. 08.22.

Attn: Head, Regulatory 3  
**Office of the Communications Authority (OFCA)**  
29/F Wu Chung House  
213 Queen's Road East  
Wanchai, Hong Kong

RE: Proposed Allocation of the 26 GHz and 28 GHz Bands to Mobile Service  
and the Associated Arrangements for Spectrum Assignment and  
Spectrum Utilisation Fee

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Dear Sir / Madam,

The Asia-Pacific Satellite Communications Council (APSCC), welcomes this opportunity to provide comments and views in response to the public consultation, jointly issued by the Secretary for Commerce and Economic Development (SCED) and Communications Authority (CA) of Hong Kong.

APSCC is a non-profit international association representing all sectors of satellite and/or space-related industries, including private and public companies, government ministries and agencies, and academic and research entities. The overall objective of APSCC is to promote communications and broadcasting via satellite as well as outer space activities in the Asia-Pacific for the socioeconomic and cultural welfare of the region.<sup>1</sup> APSCC, and specifically its satellite operator members support the introduction of fifth generation (5G) mobile services. Indeed, many of APSCC'S satellite operator members are actively involved in providing infrastructure that will be critical to the success of 5G.

APSCC fully supports comments submitted to the Hong Kong authorities, by other satellite industry groups and trade associations, including AVIA,ESOA and GVF, and would add its voice to emphasise the following points:

1. Many satellite operators either have satellites in orbit or scheduled to launch in the next two to three years covering Hong Kong as part of the wider Oceania and Asia Pacific regions. Some of these are already or will be using frequencies overlapping with those that SCED / CA is considering for terrestrial 5G mobile services – especially the 27.5-28.35 GHz (or “28 GHz” band). Satellite will be an important part of the future 5G ecosystem, just as it forms an important part of today's 2G/3G/4G ecosystems. Thus, as part of spectrum planning for 5G, SCED / CA will need to consider not just the terrestrial mobile component of the 5G ecosystem, but also the satellite component, of which the Ka-band – especially the 28 GHz band – is a key band that is already being deployed for High Throughput Satellites (HTS) designs.

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<sup>1</sup> More information on APSCC can be found at [www.apsc.or.kr](http://www.apsc.or.kr).

Even if the use of satellite to complement 5G systems is not expected to be extensive within the territory of Hong Kong itself, the CA must bear in mind its statutory responsibility to foster an environment that “enhance[s] Hong Kong’s position as a communications hub in the region.”<sup>2</sup> A number of satellite operators – including Hong Kong-licensed satellite operators that are members of APSCC – are building HTS systems with Ka-band earth stations in Hong Kong to connect with locations outside Hong Kong. In other words, they are designing HTS networks that will very much make Hong Kong a “communications hub in the region.” The CA’s spectrum decisions on 5G should not preclude such systems, many of which are already in advanced stages of construction.

The proposed allocation of the 28 GHz band to mobile services, is of concern to APSCC and its members, due to: (1) its existing and rapidly growing use for fixed satellite service (FSS) applications, and (2) no potential for its global 5G harmonization, as it is not on the WRC-19 agenda for discussion. There is plenty of other spectrum for consideration under WRC-19 A.I. 1.13, some of which are much better suited to 5G high bitrate requirements, including in bands not shared with the FSS and even in some bands shared with the FSS in which there are comparatively fewer existing and planned FSS deployments than the 28 GHz.

International studies are ongoing on the interference into receiving space stations due to aggregation of emissions from multiple 5G base stations in the 24.25-27.5 GHz (the “26 GHz” band) and other bands under WRC-19 Agenda Item 1.13. A minimum 5G base station down-tilt and EIRP density limits would be required to reduce the probability of interference from 5G base stations and devices into receiving space stations, as well as some measures to avoid 5G transmissions directly into FSS uplink earth station reflectors. Any identification for 5G by SCED / CA in the 26 GHz band as a minimum would need to adhere to limitations prescribed by WRC-19 or inherent in the international studies used to demonstrate compatibility between co-primary FSS and mobile services in the band.

Aside from the still-to-be-concluded international studies referred to above, there are no comparable efforts studying the impact of IMT on deployment of new FSS earth stations. The proposed first-come-first-served approach does not adequately preserve the future ability of FSS earth stations to continue deploying in the bands shared with IMT once IMT is licensed and deployed, and is thus incompatible with the co-primary allocation of the band to the FSS. Instead, APSCC proposes an approach that would allow 5G base stations and devices to be deployed without interference protection from co-primary FSS transmissions and to require the base stations and devices to intelligently switch to a vacant frequency (e.g. one not shared with FSS) when experiencing co-frequency interference from the FSS. This will enable continued deployment of both the public mobile services and FSS earth stations in the future.

Deployment of 5G in the 28 GHz band is to be discouraged, given the existing and planned FSS deployments in the band for a wide variety of services. Any 5G deployment in this band, especially, should only be on strictly non-protected basis and appropriate limits should be applied to avoid interference to receiving space stations. Should 5G base stations encounter interference in the 28 GHz band, mechanisms should be implemented enabling the automatic switch to 24.25-24.65 GHz, 25.25-27 GHz or other bands where interference from FSS is not an issue. It is also noteworthy

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<sup>2</sup> Communications Authority Ordinance [Cap. 616], s.4(4)(a).

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that the 27-27.5 GHz band is allocated to FSS in ITU-R Regions 2 and 3. Should the SCED / CA nevertheless consider this band for 5G, it would need to be in a manner that would protect FSS space station receivers and not limit the ability to develop and deploy future transmitting earth stations in the band.

The 24.65-25.25 GHz band is foreseen as being used primarily for BSS feeder links under a recent allocation made at WRC-12. It is envisaged that, in the future, the BSS bands and associated feeder link bands could be used to support terrestrial 5G networks by efficiently distributing common content to 5G base stations across a wide area. As a result, the ability to provide future uplinks from Hong Kong must be safeguarded as well as protection for receiving space stations in this band. Again, 5G transmitters in this band would need to comply with ITU-prescribed restrictions and/or made subject to the restrictions inherent in the studies that demonstrated compatibility between the FSS and MS.

Overall, satellites tend to have regional or global coverage. Assignment of spectrum to other services in parts of the coverage areas, without first ensuring compatibility, will create unforeseen and unfillable gaps in the coverage area. In general, for services such as 5G and satellite, global harmonization of spectrum is not only good practice, but an essential requirement for global inter-compatibility. APSCC strongly urges SCED / CA to adhere to these basic principles.

Finally, if the Spectrum Utilisation Fee is to be applied to administratively assigned spectrum in any frequency band, it should be applied to all users or assignees of the band and according to their specific characteristics and spectrum usage in a fair and reasonable manner.

APSCC sincerely hopes the Hong Kong authorities will take the points highlighted herein into account given the importance of adopting a global harmonised approach on the allocation of radio spectrum for 5G.

Yours sincerely,



**Gregg Daffner**

President

Asia-Pacific Satellite Communications Council

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