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Office of the Communications Authority
The Government of Hong Kong, SAR
29/F Wu Chung House
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Hong Kong
(Attention: Head, Regulatory 3)

By e-mail: consult-26-28GHz@ofca.gov.hk

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

Viasat Inc. is a global communications company headquartered in the USA, with business activities and presence throughout the world, including design, manufacturing and equipment sales, service and support operations in China as well as in other Asia/Pacific countries and further bolstered by global business partners including in Hong Kong. As a global broadband services and technology company, Viasat offers services and equipment which connect digital communications users and communities by supporting high-bandwidth internet services delivery through its ground and space systems infrastructure to a variety of fixed and mobile platforms users, including: residential consumers, enterprise operations, government agencies, and passengers and crews on commercial and business aircraft, watercraft and terrestrial vehicles, plus significant signal and content back-haul services in support of both fixed and mobile terrestrial service networks and providers.

Viasat thanks the CA for this opportunity to share its views, feedback and opinions on the proposed allocation of the 26 GHz and 28 GHz bands for the potential use of 5G IMT systems in Hong Kong.

I. BACKGROUND - Viasat's current and future Ka-band satellite fleet and network operations and service.

The world's use of bandwidth is doubling every two or three years. Recognizing this need, Viasat over the past decade years has designed, developed, and now operates very high-speed and high-capacity satellite systems and associated networks which have been designed and developed specifically to keep up with this increasing demand through vastly improved connection speeds and bandwidth capacity for all its customers whether they terrestrial fixed/mobile, aero or maritime platform based and regardless of the subscriber/end user, i.e. personal/private, enterprise or government.

Viasat-1 Satellite System

In 2012, Viasat launched the new era of multi-beam satellite systems by launching [Viasat-1](#), which began by providing commercial services in North America. Today, Viasat-1 remains still the second highest capacity satellite in commercial operation. Viasat-1, however, is only the first stage of Viasat's multi-

generation system of very and ultra high-speed satellites operating in the Ka band (17 GHz/28 GHz). Viasat's business and service objective is a continuing transformation of the economic viability and quality of high-speed satellite services as an alternative to traditional satellite service models, as well as and terrestrial service models including 5G for broadband connectivity and data and content access.

Viasat-1's design enabled the following performance enhancements:

- Over ten times the speed of any satellite previously operating in the Ka band.
- The only such system to provide multimedia Internet.
- The cost per gigabyte of service is a fraction of the cost when such service capacity is provided by other satellites.
- Viable cost and operational competition with terrestrial services – currently about 40% of Viasat's new subscribers have other network solutions, both terrestrial and satellite alternatives, but have chosen Viasat's satellite network to meet their requirements and needs.

Viasat-1 has proven that satellites are not just a last-resort solution for rural and remote areas with no other connectivity options. Indeed, as shown in the figures below, Viasat's service competes successfully with terrestrial providers even in urban and suburban areas.

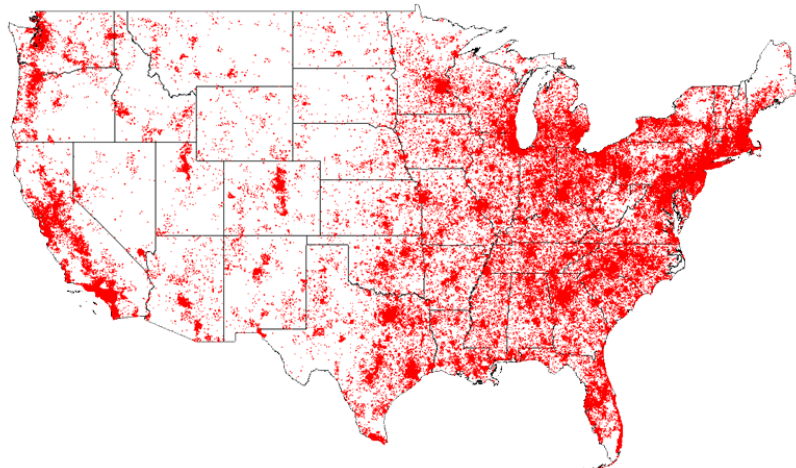


Figure 1 - Viasat-1 consumer broadband subscriber distribution in US

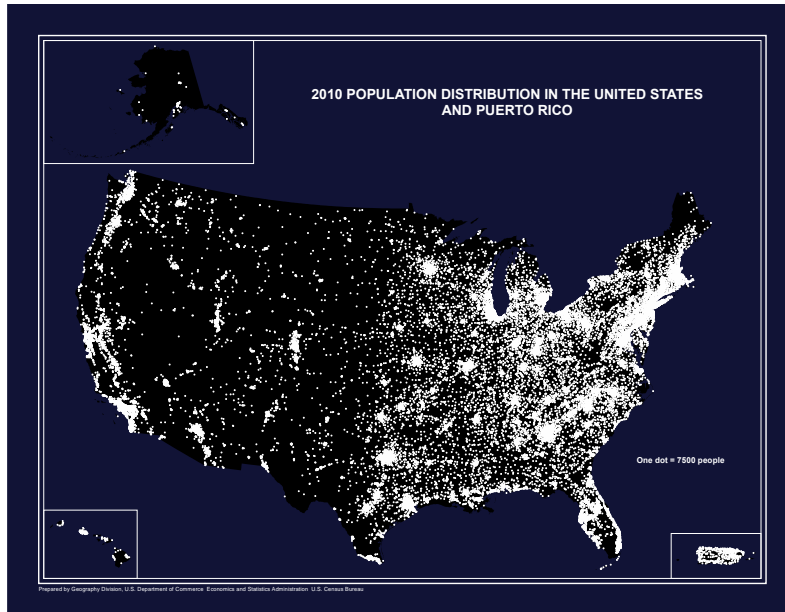


Figure 2 - US population distribution (from 2010 US Census Bureau statistics)

Viasat-2 Satellite System

Viasat’s second-generation satellite, Viasat-2 was launched on June 1, 2017. In conjunction with Eutelsat’s Ka-Sat, the Viasat-2 system provides robust and very high-speed broadband coverage of the Americas, Europe, Africa and Middle East. [Viasat-2](#) was designed to combine high-capacity bandwidth with a vast coverage area footprint. Viasat-2 has the flexibility to dynamically allocate capacity to where demand is at any particular time. In addition to having a coverage area seven times that of Viasat-1 and technological upgrades to increase capacity, Viasat-2 is designed to double the economic advantages of Viasat-1, while also doubling the network speed available to network subscribers/users. Viasat-2’s network continues the evolution of customer service capabilities, cost efficiencies and improvements begun by Viasat-1.

Viasat-3 Satellite System

Viasat-3 is Viasat’s third generation satellite and will compose Viasat’s ultra high-capacity, high-speed global coverage constellation of three satellites, combined with supporting ground network infrastructure. The first two Viasat -3 satellites will cover the Americas, Europe, the Middle East, Africa and portions of western Asia. Development and construction of these satellites and the system’s ground network are currently underway and scheduled for delivery and operations in 2019. The third Viasat-3 satellite, which will complete Viasat’s global satellite network and enable end-to end global service, will be introduced into to service in 2021. This third satellite and its associated ground system will provide coverage and service to Hong Kong, as well as the remainder of the Asia-Pacific region (APAC) in its entirety.

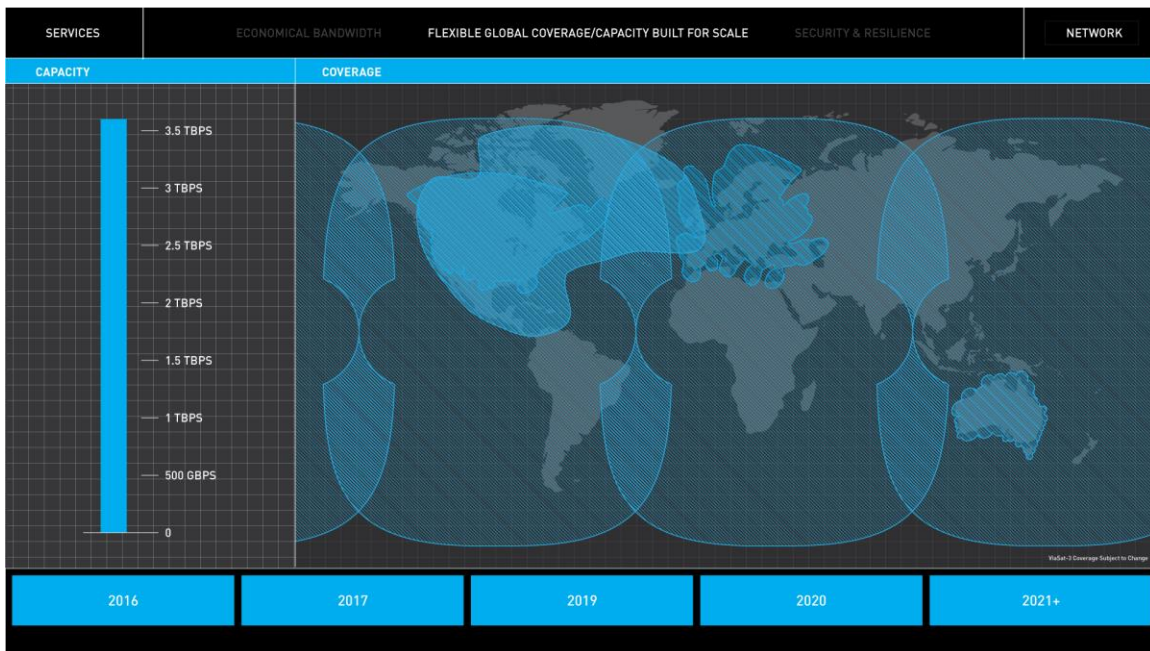


Figure 3 - Planned coverage of Viasat-3 constellation

Each Viasat-3 class satellite will deliver over 1 terabit of capacity per second (1,000 Gbit/s). This is more than the combined capacity of the more-than 400 commercial communication satellites in orbit today. This will allow end the network end users 100 Mbit/s connectivity speeds, with burst speeds in the 1 Gbit/s range.

The Viasat-3 constellation will address growing commercial access and data demands by:

- Delivering Internet service capacity of more than 100+ megabits per second (Mbit/s) to user terminals, making video streaming possible in very high definition (4K).
- Providing reliable connections of hundreds of Mbit/s to residential users, enterprise operations, government agencies, and mobile communication platforms – whether terrestrial (trains, trucks, cars), aircraft (commercial and civil) and maritime (deep-water and costal vessels, including off-shore exploration and production).
- Providing needed digital connectivity to the underserved and underdeveloped areas. Viasat-3 will make possible the offering of affordable Wi-Fi satellite connectivity to thousands of unconnected people in underserved and emerging markets.

The Viasat-3 constellation services will be provided through satellite access nodes (SANs), strategically located around the world, and which will connect Viasat-3 to the Internet backbone. These SANs will use the whole of the 17.7-20.2 GHz (space-to-Earth) and 27.5-30.0 GHz (Earth-to-space) frequency bands. Needless to say the capacity and user demand satisfaction of the Viasat-3 satellites is directly and critically correlated with the amount of spectrum available for this multi-beam satellite system in the foregoing spectrum bands.

A senior Viasat executive has succinctly summarized Viasat's business goals and role within the global communications environment by stating that Viasat believes that most of the value that it will create for itself over the next 10 to 20 years won't come from taking customers from other satellite companies, but

from terrestrial and wireless carriers. Viasat isn't aiming to be the best satellite company; it's aiming to be the best broadband company possible.

Reasonable, predictable and reliable access and assignments of Ka-band satellite spectrum is key to providing this kind of efficient and effective global broadband service to all users, who ever they are and where ever they may be.

II. VIASAT'S VIEWS ON THE PROPOSED ALLOCATION OF THE 26/28 GHz BANDS TO THE MOBILE SERVICE

Viasat offers the following general views in response to the questions presented in the Consultation of 26 July 2018.

Viasat believes that the Communications Authority should fully support Resolution 238 of the WRC-15, as well as support the work plan and output associated with Agenda Item 1.13 to be considered at the upcoming WRC-19.

Resolution 238 and A.I. 1.13 represent the decision of WRC-15 regarding the best way to address the spectrum needs associated with the development of 5G, regardless of the views and policies of some administrations which have chosen to do disregard the decision of WRC-15. To do otherwise would likely in the long run be counter-productive and diminish consumer choice and access, as well as service affordability rather than improve such matters. Satellite services have offered and will certainly in the future continue to offer capabilities which will never be completely met, nor fully satisfied by the capabilities of non-satellite services and providers. As such, Viasat respectfully encourages and asks the CA to preserve the 28 GHz for satellite uplink usage in any decision it may make regarding usage of this band.

Viasat, again wishes to thank the Communication Authority for this opportunity to share information about its technical and operational capabilities and global business strategies and plans, as well as sharing its viewpoints about how the CA should proceed in its efforts to develop sound spectrum planning policies and use priorities for Hong Kong.

Finally, while Viasat already has important commercial service connections both directly and indirectly to Hong Kong, Viasat is committed to greatly expanding its direct offering of services to Hong Kong, to both businesses and consumers alike, in the very near future and adequate satellite access to the 28 GHz band is a critical component in fulfilling this commitment.

Yours sincerely,



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