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Spectrum Roadmap (2020): Facilitate the Sustainable Growth of Industry (draft)

Dear Sir or Madam,

SES World Skies Singapore Pte Ltd, on behalf of the broader SES Group (“**SES**”), hereby provides its comments on the Post and Telecommunications Department’s (“**PTD**”) draft *Spectrum Roadmap (2020): Facilitate the Sustainable Growth of Industry*, released November 2020 (“**Spectrum Roadmap**”).¹

SES is a global satellite operator that operates a fleet of 50 satellites in geostationary orbit (“**GEO**”), as well as the innovative O3b Ka-band constellation of High Throughput Satellites (“**HTS**”) in medium Earth orbit (“**MEO**”). In 2021, SES will begin launching the next-generation of O3b satellites called “**O3b mPower**,” which will provide even higher throughput and unmatched flexibility.

1. Millimetre Wave (“mmWave”) Bands

SES is concerned the PTD is considering identifying 3GPP n257 band (26.5-29.5 GHz band) for 5G/IMT in Myanmar. The 27.5-29.5 GHz band has not been identified by the ITU for 5G/IMT-2020 services. This band is also currently being used to provide satellite services in Myanmar.

Specifically, a mobile network operator in Myanmar is using O3b satellite services (which operates in 27.5-29.5 GHz) to extend mobile 4G-LTE services into northern Myanmar. It is well known that the rugged terrain in northern Myanmar makes it very difficult to connect the region with terrestrial fibre. Instead, O3b satellite links are being used to provide high-throughput, low-latency connectivity to backhaul traffic from multiple 4G-LTE base stations in the region. Without O3b connectivity, it is likely that 4G-LTE service would not be available in these parts of Myanmar.

¹ See <https://www.ptd.gov.mm/NewsDetail.aspx?id=szKoYiBpdvuULwoKsrB4Xw%3d%3d>.

In fact, the 27.5-29.5 GHz band is widely used around the globe for broadband satellite services on over 100 Ka-band satellites. Besides O3b and O3b mPower, multiple GEO HTS satellites also use this band to serve the Asia-Pacific region (including Myanmar). These satellites include, for example, Inmarsat's GlobalXpress, SES's SES-12, and Thaicom's IPStar. The band is used not just to extend mobile networks, but also to provide direct connectivity to unconnected areas and provide broadband connectivity to aircraft, ships and vehicles (on "earth stations in motion" or "ESIMs").

Furthermore, the 27.5-29.5 GHz band is also expected to be used by several constellations of satellites in low Earth orbit ("LEO") that are under construction by OneWeb, SpaceX and Amazon. It would be unfortunate for Myanmar to lose access to these new broadband satellite services by designating the n257 band for 5G.

Thus, SES would urge the PTD to consider the n258 band (24.25-27.5 GHz) for 5G instead of the n257 band. This band has been globally harmonized by the ITU World Radiocommunication Conference in 2019 for 5G/IMT-2020, and provides up to three gigahertz of spectrum to meet 5G/IMT requirements. Since it is a globally harmonized band, an equipment ecosystem will certainly be available in the band. The n258 band also overlaps partially with n257 band (in the frequency range 26.5-27.5 GHz) ensuring compatibility with equipment ecosystem based on the n257 band as well. Importantly, use of the n258 band will avoid overlap with the satellite services in the 27.5-29.5 GHz band that are currently being used in Myanmar to extend broadband 4G-LTE services into areas that would not otherwise receive such services.

By putting 5G in the n257 band (24.25-27.5 GHz), and preserving the 27.5-29.5 GHz band for satellite, Myanmar can enjoy the benefits of both 5G *and* broadband satellite services.

2. 3.5 GHz Band

SES operates two GEO satellites with coverage of Myanmar that operate in the 3625-4200 MHz band, which is adjacent to 3400-3520 MHz ("**3.5 GHz**") band proposed by PTD for 5G mobile services. In SES's view, the proposed 105 MHz guard band (3520-3625 MHz) should provide a good amount of adjacent band protection for satellite services above 3625 MHz. However, it should be noted that some satellite earth stations operating above 3625 MHz may require the installation of new filters to ensure that their low-noise block (LNB) downconverters are not overloaded (also known as receiver blocking) by IMT emissions below 3520 MHz.

Please contact the undersigned if you have any questions.

Yours Sincerely,

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