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Spectrum for 5G broadband in mmWave bands

Satellite technology will be integrated into the future 5G ecosystem and the satellite spectrum requirements must therefore be taken into account as part of Australia's spectrum planning process. 5G mobile spectrum requirements need not be, and should not be, mutually exclusive of satellite spectrum requirements since both will have a role to play in tomorrow's communications infrastructure.

Today's High Throughput Satellite ("HTS") systems operate in the C-, Ku- and Ka-band frequencies, and continued, sustainable access to these frequencies will be necessary for satellites to continue playing their role in the 5G ecosystem. Next-generation HTS and Very High Throughput Satellite ("VHTS") systems will also operate in more of the Ku-band, Ka-band, and in parts of the Q/V-band, including some of the bands being examined for 5G terrestrial used under WRC-19 Agenda Item 1.13.

Nearly all of the 37.5-42.5 GHz (space-to-Earth), 47.2-50.2 ("47") GHz and 50.4-52.4 ("50") GHz (Earth-to-space) V-band spectrum is a longstanding part of the existing FSS allocation, and is recognized as a critical growth band for FSS. The satellite industry has made preparations over decades to use V-band spectrum for broadband satellite services as soon as mmW technology became commercially feasible. With lower satellite bands approaching saturation, V-band now represents the only FSS spectrum band with currently feasible technology and sufficient capacity to deliver very high rate broadband capacity simultaneously globally. A number of satellite operators have planned next-generation Very High Throughput Satellites (VHTS) using parts of 37-52.6 GHz frequency band.

Additionally, WRC-19 Agenda Item 1.6 is considering the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space).

Boeing and several of these satellite operators are planning the deployment of global constellations of non-GEO satellites. The deployments of these next generation non-GEO constellations represent tens of billions of dollars of investments. Every effort should therefore be made to avoid disrupting such investments, especially when there is ample other spectrum under consideration that is more likely to be globally harmonized for 5G.

ACMA should assess the likely spectrum requirements of these future satellite systems as well as future terrestrial 5G mobile systems. Sharing studies between future 5G/IMT-2020 and satellite services in the WRC-19 Agenda Item 1.13 bands are underway at the ITU (i.e. at TG 5/1) that should be taken into account once concluded. To the extent that future 5G/IMT-2020 mobile and satellite services are to share the same spectrum, then reasonable sharing conditions based on these studies will need to be developed.

We request that ACMA ensure that sufficient satellite spectrum in this range remains available for ubiquitous satellite user terminals and that shared use of such spectrum for FSS and terrestrial 5G mobile be preserved and harmonized internationally.