



20 February 2024

SUB: The Australian Communications and Media Authority's Request for Views on the 2 GHz MSS technical parameters and demand considerations

SpaceX appreciates the opportunity to share its comments to the Australia Communications & Media Authority ("ACMA") regarding the 2 GHz Mobile Satellite Services ("MSS") technical parameters and demand considerations consultation.

About SpaceX

SpaceX is a privately-held company that is revolutionizing space technologies, with the ultimate goal of enabling humanity to become a multi-planetary species. As the world's leading provider of launch services and the only provider with an orbital class reusable rocket – SpaceX has deep experience with both spacecraft and on-orbit operations and has now launched deployed Starlink - the world's most advanced high-speed, low latency broadband network in space.

Starlink is the world's first Low Earth Orbit satellite constellation that leverages both ground-to-satellite and satellite-to-satellite communications via optical Intersatellite links to provide truly global coverage anywhere on Earth. SpaceX has now launched over 5,000 Starlink satellites into low earth orbit. Since launching commercial services in October 2020, Starlink now has over two million broadband subscribers.

Starlink now enables global connectivity for everyday use cases including remote work, streaming, distance learning, and video calls as well as emergency response, agriculture or business applications. Whether a subscriber is at home or school or is moving hundreds of kilometers an hour at sea or in-flight, Starlink is providing fiber-like connectivity anytime and anywhere, helping to eliminate the digital divide and providing critical connectivity when communities are impacted by crises.

Beyond its Starlink satellite broadband connectivity, in October 2022, SpaceX announced its first Direct to Cell partnership, signaling a new era in satellite connectivity by connecting directly to unmodified mobile handsets. Starlink Direct to Cell will deliver connectivity to users on terrestrial partner networks in areas or at times when terrestrial capabilities are otherwise not possible. SpaceX has invested millions of dollars to design its Starlink Direct to Cell system with the capability to operate over a wide range of spectrum bands using commercially available mobile phones operating on the LTE standard, including the 1.6 GHz to 2.4 GHz bands.

Since that initial announcement, SpaceX has received tremendous interest from mobile partners around the world that are able and willing to leverage their authorized spectrum to enable satellite direct-to-cell capabilities. On January 2nd, 2024, SpaceX launched its first Direct to Cell enabled satellites onboard a Falcon 9 rocket. Just six days later, SpaceX successfully sent and received the first SMS messages using Starlink satellites. SpaceX plans to continue launching Direct to Cell-capable satellites throughout 2024 and to launch its commercial messaging services later in this year with voice and data service to be brought online in 2025. SpaceX and its growing list of partners are on the cusp of delivering this truly innovative direct-to-device capability with the potential to benefit millions across the nation and around the world.



Response

The ACMA's progressive policy leadership, including in its administration of satellite licensing frameworks in the shared Ku and Ka bands, has enabled a thriving and dynamic satellite services industry in Australia. As the ACMA continues its consideration of yet another critical milestone for satellite services in the 1985-2005 & 2170-2195 MHz band ("2 GHz MSS"), SpaceX provides brief comments to encourage the development of resilient, flexible, and market informed policies for space-based communications.

SpaceX supports the ACMA's exploration of the appropriate technical parameters and demand for the 2 GHz band in Australia. Given recent advancements in satellite technology, SpaceX believes it is important that the technical design elements are sufficiently flexible to support both possible future and current MSS technologies and the assignment mechanism is similarly flexible to support demand for different amounts of spectrum to meet a variety of different use cases.

Accordingly, SpaceX encourages the ACMA's consideration of the following:

- **The ACMA should adopt realistic protection limits and co-existence showings as needed in the interest of spectral efficiency. The ACMA should also stipulate that any protection limits extend only to operational and deployed systems in adjacent or co-channel bands.**

We support the ACMA's current approach to adopt realistic, protection limits by considering the actual use of spectral assets in adjacent bands, including in the exploration of relaxed TOB protection limits in areas of reduced usage.

We encourage the ACMA to consider flexible technical limits in support of new technology developments, including adaptive power controls, advanced beamforming, and improved phased arrays that will ultimately improve coexistence compatibility for satellite services, including the MSS, with other spectrum users.

- **The ACMA should take care not to impose heavy limitations on these licenses, including pre-coordination requirements, which could inadvertently devalue and discourage operator participation in the 2 GHz license process. We support the ACMA's view that coordination between adjacent and co-channel MSS services are not necessary.**

Requirements, including pre-coordination with adjacent operators, introduce unnecessary risk into high-cost investments from satellite operators. The ACMA should not introduce pre-coordination requirements in highly sought after bands where prospective licensees and operators in adjacent bands – and therefore, stakeholders in a spectrum coordination proceeding- may be one and the same.

Instead, SpaceX supports the use of a non-interference license condition on the 2 GHz licenses in conjunction with filed co-existence and non-interference showings when deemed necessary by the ACMA.

- **Spectrum allotments should enable as many variations as possible. Future licensing methods should embrace any variation of permissible commercial arrangements for real deployments.**

SpaceX expresses support for any license framework that maximizes future flexibility in technology deployments and commercial arrangements to deliver service. SpaceX notes that Configuration 1, a pre-



determined pair of 15 MHz and 10 MHz blocks, would preclude the business plans of someone wishing to acquire only a 5 MHz pair, so believes Configuration 2, a set of generic 2 x 5 MHz paired lots, offers more flexibility to support a variety of business plans while not precluding an outcome identical to Configuration 1.

Conclusion

We strongly believe that future-proof spectrum policy, including those explored by the ACMA in this consultation, are central to the development of next generation satellite services including innovative direct- to-mobile and critical internet of things use cases. SpaceX again commends the ACMA for its efforts to make additional satellite licenses available in Australia, which will in turn deliver critical capability from space to the benefit of millions of consumers in Australia. SpaceX welcomes the opportunity to further discuss its feedback above with the ACMA.