SPACEX

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Re: ACMA Consultation Paper on its Five-Year Spectrum Outlook 2025-2030 "FYSO"

Starlink Australia Pty Ltd ("SpaceX" "Starlink") appreciates the opportunity to provide comments and information to support the Australia Communications and Media Authority (ACMA)'s ongoing work regarding its Five-Year Spectrum Outlook (FYSO).

Starlink Services in Australia

Starlink is a global, low-earth orbit satellite system delivering advanced satellite connectivity anywhere on Earth. Australian subscribers have leveraged Starlink for reliable and low-latency satellite broadband spanning everyday use cases and applications, in fixed-site, enterprise, and in-motion settings. Starlink is also committed to disaster relief, remote and rural connectivity, and supporting government resiliency. For example, during the flooding in New South Wales in 2022, Starlink services were used to restore connectivity to cut-off communities to support disaster-relief efforts. Starlink technology has also been leveraged by social impact organizations including the Foundation for Indigenous Sustainable Health to provide access to health technology in both the Muludja and Bawoorrooga Remote communities, and by the Royal Flying Doctor Service to enable the first virtual emergency centre in the outback town of William Creek. [redacted]

Since its arrival in Australia in 2021, Starlink has worked closely with the ACMA to deliver best-in-class, next generation satellite broadband in lockstep with the readiness of new technologies, ranging from new form factors for Starlink consumer-side terminals,[1] higher capacity second generation satellites,[2] and robust ground network capabilities including expanded ground network investments as well as the addition of E-band capabilities for improved consumer backhaul.[3]

The ACMA's innovative and forward-looking approach to spectrum management has enabled Starlink to double down on its ground station capabilities in country [redacted] leveraging both the Ka and E-band, representing tens of millions of dollars in infrastructure investment to Australian industry, including local telcos, fiber partners, and construction firms. Notably, by analyzing and actioning on interim arrangements for E-band ("75/85 GHz") Fixed Satellite Service (FSS) access on a non-interference basis, the

[1] https://www.starlink.com/videos
[2] https://www.starlink.com/public-files/Gen2StarlinkSatellites.pdf
[3] https://www.starlink.com/public-files/StarlinkLatency.pdf

ACMA enabled Starlink to nearly double the backhaul capacity available to Australian consumers through its second generation system, alongside leading administrations in the Americas and Europe. These developments have directly led to the delivery of lower latency and more robust broadband services to the Australian public. In addition, Starlink appreciates the ACMA's collaborative approach in establishing arrangements that balance innovation in space-based broadband with sound spectrum management principles. In particular, the constructive work in establishing the interim arrangements for the W-band in late 2025 demonstrates the ACMA's proactive approach to supporting industry needs while global policy and regulations continue to develop.

In late 2023, Starlink Mobile announced the addition of direct-to-mobile capabilities on newly designed Starlink satellites and its first Direct-to-Cell (D2C) partnership with US-based mobile operator, T-Mobile, aiming to eliminate mobile dead-spots. The partnership leveraged a small portion of spectrum allocated to T-Mobile for D2C operations to integrate unmodified, market available devices to Starlink D2C satellites when terrestrial mobile towers are unavailable or out of reach.

Since then, Starlink Mobile has partnered with local mobile providers Optus and Telstra, launching commercial service with Telstra across the country in June 2025. Today, Australian mobile subscribers on Telstra's network can use Starlink Mobile to access SMS messaging, with additional capabilities—including IoT, low-data throughput, and eventual voice services—launching soon. [redacted] Starlink looks forward to continuing to serve Australian customers through its next-generation direct-to-cell (D2C) system, in line with the Australian Government's focus on expanding and strengthening the nation's telecommunications networks, including the delivery of voice in Starlink's second generation mobile satellite service.

As elaborated in other contributions to the ACMA, Starlink remains engaged on the topic of the 2 GHz MSS allocation in relation to its ability to support Australian policy priorities outlined in the proposed Universal Outdoor Mobile Obligation. Starlink welcomes further opportunities to engage on this topic as it will determine whether Starlink will be able to deliver a widely accessible satellite to mobile service, including emergency voice capabilities to all Australian subscribers across all mobile providers. Starlink also reiterates that appropriate arrangements in this band must be consistent with those adopted by the ACMA in comparable spectrum bands for mobile satellite [redacted].

Looking ahead, anticipated ACMA engagement

Starlink is eager to continue its close collaboration with the ACMA and Australian government regarding its forthcoming developments with its next-generation direct-to-cell capabilities, V3 satellite system, and new ground segment equipment; and provides an updated briefing of these developments below.

Updates to Starlink broadband system:

As outlined in Starlink's response to the ACMA's consultation paper on its Five-Year Spectrum Outlook 2025-2030, the Starlink V3 system is designed to deliver a substantial increase in performance compared to its existing system. Compared to the current second-generation satellites, Starlink's V3 satellites and ground infrastructure will deliver more than 10x the downlink and 24x the uplink capacity on a per-satellite basis, while also incorporating improvements in orbital sustainability and reflectivity.

To support these capabilities, Starlink is continuing to evolve its ground infrastructure across Australia. The existing network of Ka- and E-band gateway antennas is being expanded, particularly in areas of high demand to bring urban quality internet to satellite users everywhere. [redacted]

Following the ACMA's December 2025 decision, Starlink has been preparing for the deployment of its W-band-capable gateway infrastructure under its newly granted licenses. These early deployments are expected to play a critical role in validating the system's performance and coexistence with other services. They will also support a growing share of Starlink's backhaul requirements, particularly as demand for capacity continues to increase. In light of this, Starlink anticipates that a substantial portion of future gateway backhaul will rely on frequencies above 100 GHz, including W-band. These frequencies offer significant capacity advantages but require regulatory frameworks that reflect their distinct technical characteristics.

In addition to W-band, Starlink emphasizes that access to Q/V-band spectrum will be equally important in enabling next-generation gateway deployments. While W-band offers substantial capacity advantages, Q/V-band provides a complementary layer with capacity and performance on-par with E-band. Also being closer to Ka-band than E or W, the Q/V band will offer a more reasonable alternative for congested Ka-band operations for all satellite operators. For Australian consumers to benefit from V3's next-generation broadband capabilities, Starlink will need the ACMA's consideration and support for continued and long-term spectrum access for its quad-band gateways. Starlink expects to invest tens of millions of dollars in Australia in the coming years to support these developments. The availability of spectrum, including under the newly introduced W-band framework, remains a key enabler of this continued investment.

In support of these efforts and to connect more Starlink subscribers with Australia's secure data centers, internet exchanges, and fiber networks, Starlink is also adding additional Starlink Points of Presence (PoPs) in Australia[redacted]. These new PoPs will provide Starlink Australia consumers with the most robust and extensive ground network in the wider Asia-Pacific region, all while supporting Australia's booming digital economy.

Looking further ahead, Starlink is also designing new user terminals leveraging an expanded Ku-frequency range to manage increasing congestion in the Ku-band and unlock additional fronthaul capacity. Starlink welcome the ACMA's feedback as it finalizes these designs given the forthcoming work described by FYSO in these bands.

Updates to Starlink Mobile system:

Starlink Mobile is looking forward to expanding its partnership with Telstra and Optus with the arrival of Starlink's next generation D2C services, which will enable the provision of voice and mobile broadband capabilities from satellite on mobile phones, including the provision of Triple Zero services.

The next generation Starlink Mobile system will continue to leverage the terrestrial spectrum assets of its mobile partners in select jurisdictions, including in Australia, but primarily rely on access to the harmonized 2 GHz satellite band for its forthcoming services, inclusive of voice, video, and mobile broadband capabilities. The use of the 2 GHz satellite band is now possible

following Starlink's acquisition of Echostar's global satellite priority in this band, including local spectrum access secured in most major jurisdictions including the Americas and the European Union.

In late 2027, this upgraded system will provide service speeds at least twenty times faster than even Starlink's current successful Direct to Cell system and enable low-latency voice and mobile broadband directly to the handsets of everyday Australians no matter where they are.

However, the expansion of Starlink Mobile's services with Australian mobile operators, and the ultimate delivery of voice and mobile broadband in Australia by late 2027, will only be possible if accompanied by the appropriate policy decisions in the 2 GHz satellite band that align with international and Australian allocation precedents.

Brief comments to the FYSO

Starlink provides the following comments for consideration with regards to the FYSO:

- ***New satellite spectrum for broadband services:*** As Starlink noted in its consultation responses to the ACMA FYSO from 2022-2025, next generation satellite operators have historically relied on access to globally harmonized, workhorse satellite bands, such as the Ku- and Ka-bands, which are allocated for fixed satellite use. However, these bands are becoming increasingly congested due to the ever-increasing demand for consumer backhaul and the welcomed addition of new satellite players. At the same time, next generation satellite services must deliver lower latency, higher capacity, and increasingly resilient service to meet the needs of modern consumers.

  Looking ahead, Starlink and future satellite service providers will increasingly rely on the use of other frequency ranges to meet consumer needs, including in the expanded Ka, Q/V, E, and terahertz frequency ranges. Administrations globally are increasingly attuning to these developments and are enabling access to high-frequency spectrum as part of a broader shift toward supporting next-generation satellite capacity. In addition to the Federal Communications Commission's (FCC)'s authorization grant for Starlink to operate its next-generation system using Q/V-, W-band on January 9, 2026, the ACMA's introduction of interim W-band arrangements demonstrates a practical and effective approach to enabling early access to these bands.

  Building on this momentum, Starlink encourages the ACMA to consider the possibility for default rules that can serve to expedite spectrum access for satellite services in new spectrum bands with similar incumbent services and physical properties to other shared satellite spectrum with existing regulatory arrangements. For example, the ACMA may consider the application of similar arrangements to those in RALI MS45 to the Q/V and terahertz ranges which will reduce regulatory burden while maintaining a considered approach to interference management.

- ***Reform of Equivalent Power Flux Density (EPFD) Limits and application of 22.5CA before global ITU reform:*** The ACMA should incorporate application of Article 22.5CA to allow NGSOs to operate according to different limits even before a global EPFD reform at the ITU. Additionally, the ACMA should continue advocating for a global reform of conservative, flawed and outdated limits at the ITU. Consistent with the Australian delegation's support of AI 10 at WRC-23, current EPFD rules—developed in the 1990s—are outdated and should be revised. With updates from the last century, the current limits needlessly restrict the performance of non-geostationary satellite systems, while hurting satellite consumers everywhere. As the ACMA is aware, Starlink has completed a

campaign of six scientific tests in six different countries to demonstrate how current limits can be safely exceeded and to demonstrate the validity of a proposed new and more efficient GSO protection criterion. Moreover, SpaceX has been submitting a fully-fledged protection framework as part of the US domestic process to reform downlink limits in the US. In Australia, more efficient limits as proposed by SpaceX would result in an 8X increase in Starlink's capabilities when compared to today, and gigabit speeds as it relates to the forthcoming V3 system.

While a global reform at ITU is most likely inevitable, it will take time. The earliest it can happen is at the end of WRC27, the latest at the following Conference. Australia should not wait for the ITU in this case, since Article 22.5CA already allows administrations to relax EPFD downlink limits over their territory. The United States is the first of a soon-to-be growing number of administrations to begin rulemakings to review their national EPFD limits consistent with ITU Article 22.5CA. In fact, the FCC published a draft Report and Order on Modernizing Spectrum Sharing for Satellite Broadband on April 9, 2026. Not long after, the FCC unanimously adopted the order, replacing domestic EPFD rules with a modern, efficient GSO-NGSO sharing framework on April 30, 20264. This shift is expected to enable significantly higher capacity, improved spectrum efficiency, and expanded NGSO system performance. Starlink strongly urges the ACMA to include consideration of a similar proceeding given the importance of satellite services in Australia's sprawling geography. It is noted that the FCC's proposed solution is aligned with the one proposed by SpaceX on the record in July 2025. The framework involves deriving technically sound and efficient protection criteria for GSO systems taking into account the GSO-GSO interference environment, instead of relying on politically agreed and technically unjustified criteria from 1997-2000. The ACMA could immediately take advantage of significantly improved Starlink service over Australia by allowing Starlink as well as other NGSOs to apply 22.5CA before any global ITU EPFD reform. SpaceX encourages the ACMA to adopt the same solution as domestically approved by the FCC in the US.

- **Review of Mobile Satellite Service Allocations in the 1980-2005/2170-2195 MHz:** Starlink appreciates the ACMA's willingness to fully consider the implications surrounding a potential 2 GHz MSS auction. Starlink strongly objects to the adoption of price-based allocation methodologies in this band, and in any satellite-first frequency band. It is Starlink's view that an auction for satellite operator spectrum abandons well-established Australian and international precedent for satellite spectrum, which sets a dangerous precedent both in Australia and around the world, and also risks the availability of commercial satellite services available to Australians and guarantees that consumers will ultimately be responsible for paying higher prices to access these global services.

  Starlink warns that an auction of the 2 GHz band is likely to significantly reduce the feasibility of an affordable 2 GHz mobile-satellite service in Australia with the capability of delivering critical voice services, including Triple Zero connectivity in the foreseeable future. Should the ACMA decide to auction the 2 GHz satellite band, the ACMA is actively choosing to abandon both Australian and international policy precedent and neglecting its stewardship of critical government connectivity initiatives including the UOMO.

  A decision to auction the 2 GHz MSS band without review of all other mobile-satellite bands approaches dangerous territory that resembles prejudicial regulatory treatment that harms Starlink

[4] FCC Modernizes Its Satellite Spectrum Sharing Rules to Boost Super-Fast Space-Based Broadband DOC-421308A1.pdf

Mobile and its partners. [redacted]

To make matters worse, because the ACMA's licenses in all other mobile-satellite bands recognize global priority, Starlink Mobile will effectively be denied access to any mobile-satellite spectrum in Australia.

Starlink strongly and respectfully urge the ACMA to reverse course on any consideration of a price-based allocation for the 2 GHz MSS band and instead apply the apparatus licensing arrangements available in all other MSS bands in Australia. Starlink looks forward to further engagement with the ACMA regarding the developments in this band in the upcoming consultations.

Starlink notes that the 2026 FYSO represents an inflection point in the development of high-frequency satellite spectrum policy in Australia, marking a transition from forward-looking proposals to early-stage deployment. The granting of W-band licenses under the interim framework in December 2025 will enable innovative use of this band for satellite broadband and provide practical insight into the performance and characteristics of these frequencies in real-world conditions. This truly marks a significant milestone in satellite-based connectivity for Australia, and the world as a whole.

Accordingly, while Starlink acknowledges the ACMA's willingness to review further W-band site deployments on a case-by-case basis, Starlink encourages the ACMA to consider a transition path toward a more permanent and predictable regulatory framework for W-band and all high-frequency bands in general. Such a framework could retain the flexibility demonstrated under the interim approach while providing greater certainty for investment and deployment at scale. Consideration may also be given to streamlined licensing mechanisms that reflect the limited interference potential of these systems.

Starlink again appreciates this opportunity to provide comments. Please feel free to reach out to us directly for further information.