STARLINK

30 May 2025

The Chief Executive Officer,
Independent Communications Authority of South Africa (ICASA)
350 Witch-Hazel Road, Eco-Park,
Centurion,
South Africa.

Attention: Ms Pumla Ntshalintshali

Re: DRAFT REGULATIONS ON DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800 - 4200 MHz AND 5925 - 6425 MHz

SpaceX is pleased to provide comments to ICASA's 2025 consultation on the draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum 3800 – 4200 MHz and 5925 – 6425 MHz bands.

SpaceX applauds ICASA's objectives of expanding broadband access to rural, underserved and remote communities, and fostering innovative, efficient and shared use of this spectrum to achieve these goals.

Over the last five years, SpaceX has deployed its Starlink satellite constellation which can deliver high-speed, low-latency connectivity anywhere on earth. Starlink is a next-generation low-earth orbit satellite system that provides customers with advanced broadband connectivity that powers conservation efforts, improves education, fosters entrepreneurship in remote areas, supports small business needs, drives scientific discovery, enhances responses to disaster relief efforts, expands access to healthcare, supports sustainable farming, facilitates work-from-anywhere lifestyles, encourages reverse migration to rural areas and could help create safer communities through better policing and emergency services. SpaceX endeavors to continually improve the Starlink system, last year introducing the commercial capability to deliver direct-to-device (D2D) services to cellular devices in partnership with terrestrial network operators around the world.

To support ICASA's work on this consultation, SpaceX submits the following comments on the proposed regulation based on its real-world experience deploying Starlink broadband and D2D services.

Should there be further deliberations on this subject, SpaceX personnel, including the undersigned, will remain available to engage with ICASA in support of South Africa's pursuit of its digitalization goals.

Please accept assurances of our highest regards.

Yours Faithfully,

Kamal Tamawa
Satellite Policy, Africa

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COMMENTS ON DRAFT REGULATIONS ON DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800 - 4200 MHz AND 5925 - 6425 MHz

1. GENERAL COMMENTS

SpaceX's Starlink provides high-speed, low-latency satellite connectivity for a wide variety of applications and with a global reach uniquely suited for areas and use cases otherwise unserved or underserved by terrestrial networks. Besides providing everyday connectivity for home, school, or business, critical industries have used Starlink to help them in their efforts, including by bridging the digital divide and reinforcing communications infrastructure against terrestrial network outages. For example, Starlink has been proven to provide reliable connectivity for emergency services personnel around the globe, aiding efforts to restore connectivity to cut-off communities and to support the ongoing emergency response efforts. Besides first responders, transit services have also leveraged Starlink technology to enable seamless connectivity in inter-city rail and air travel in a step forward for the needs of today's interconnected travelers.

In late 2023, Starlink announced its first direct-to-cell (D2C) partnership with US-based mobile operator T-Mobile, aiming to eliminate mobile dead-spots by using a separate constellation of satellites to supplement T-Mobile's terrestrial network. Starlink's D2C services enable normal cellular phones to connect even when beyond the coverage of cell phone towers without any hardware or software changes. Additional Starlink D2C partners now include Optus (Australia), Rogers (Canada), One NZ (New Zealand), KDDI (Japan), Salt (Switzerland), Entel (Chile and Peru), and Kyivstar (Ukraine), with new partnerships to be announced soon.

Last year, in its first full year of service, Starlink D2C delivered millions of messages, including providing critical connectivity to communities impacted by flooding, wildfires, earthquakes, hurricanes, cable cuts and other crises. Starlink D2C is now commercially available to consumers in the United States, Japan, Australia and New Zealand with SMS messaging and will soon be rolling out additional capabilities—including IoT, low-data throughput, and eventual voice services—in markets around the globe.

2. SPECIFIC COMMENTS ON THE DRAFT REGULATIONS

SpaceX commends ICASA for the development of draft rules that aim to foster dynamic and innovative services in the 3.8-4.2 GHz and 6 GHz spectrum so that broadband connectivity can be more quickly deployed in rural and underserved areas. SpaceX supports efficient spectrum use, maximizing the number of operators that can coexist and deploy their services without harmful interference. Satellite operators play an important role in achieving these goals by deploying and offering next-generation services efficiently and effectively to the benefit of South African citizens and businesses.

Accordingly, ICASA should consider these services in the context of the proposed rules. Both terrestrial and satellite services, whether fixed or mobile, should be equally accommodated so that ubiquitous high-speed, low-latency connectivity can be offered to people throughout South Africa as quickly as possible. While the proposed rules offer a solid foundation for the deployment of dynamic spectrum-shared services managed by a centralized authority, the proposed framework does not appear to be compatible with the deployment of satellite services, and in particular mobile satellite services (MSS), due to the following requirements:

- ***MSS and FSS devices should not be obliged to coordinate via the Unified Spectrum Switch (USS):*** The draft rules stipulate that all client devices offering connectivity services should either directly communicate with a 'Master Device', be an 'IS-CPE Category 2' or be connected through a Database Proxy in order to communicate with the USS – which in turn is authorized to define the operational parameters for the client devices. The requirements related to this process generally contemplate terrestrial links but do not consider mobile satellite services, which can aid in achieving the outlined objectives of the draft rules.

  As an example, standard cellular devices are likely to become the most widespread, MSS-compatible mobile devices. While they will natively connect with terrestrial or satellite networks,

there does not appear to be a globally harmonized protocol for communicating with a country-specific local master device such as the one contemplated by the draft regulations, making any MSS implementation technically challenging and therefore discouraging adoption.

- ***To facilitate MSS, spectrum access and availability should be predictable and consistent:*** Direct-to-Device (D2D) satellite services offer the most significant benefit to consumers and business when they can quickly and predictably connect with satellite services to establish connectivity. This is especially pertinent in situations where urgent or emergency connectivity needs are apparent – such as during medical emergencies or in the context of disaster situations.

  The proposed rules authorize the Unified Service Spectrum Provider (USSP) to remove spectrum allocations for instance due to the lack of use of the given spectrum. In the context of MSS operations, mobile devices may intermittently connect with the satellite network depending on the operational environment. To ensure consistent availability of the satellite network, the satellite operator should be sufficiently able to predict spectrum availability and be empowered to prepare reallocations of spectrum to a different band or geographic area in timely fashion. To ensure the offering of continuous coverage to users, further modifications of dynamic spectrum reallocation would need to be considered and implemented in the context of satellite services (e.g., by dynamically reallocating spectrum in a more predictable manner, less frequently, or by ensuring guaranteed time durations for the dynamically allocated spectrum instead of considering utilization for revocations).

- ***Outlined transmit power levels, maximum antenna heights and other operational limitations are not compatible with satellite services:*** The draft rules specify transmit power levels that vary based on terrain clutter, antenna elevation angles, etc. The rules additionally stipulate a maximum antenna height of 20 meters in urban areas and 30 meters in rural outdoor areas.

  SpaceX respectfully encourages ICASA to reconsider these requirements as the draft Regulations may not have contemplated fixed and mobile satellite service operations sufficiently. Both MSS and (mobile) FSS can be utilized in many operational environments, whether static or on the move. These services require sufficient flexibility in the operational requirements stipulated by the rules to operate effectively and reliably, to the benefit of the citizens and businesses utilizing the service. Further, Starlink's international D2C deployments connect with mobile handsets which are equipped with omnidirectional antennas which may be incompatible with the requirements as currently defined.

In view of the above comments, SpaceX recommends that;

1. ICASA should consider further changes to the proposed rules to ensure that satellite services are appropriately accommodated in the outlined spectrum ranges, whether as FSS (e.g., through the local deployment of user terminals) or as MSS (e.g. satellites communicating directly with mobile devices) – for example, in the 3.8-4.2 GHz range.

2. While improvements to the proposed framework can be feasible, ICASA should instead consider developing a specific regulation to encourage and accelerate the deployment of MSS in South Africa. These rules should ensure that any deployment is based on efficient, shared use of spectrum which offers a *real* service to citizens and businesses. In particular, MSS deployments can be facilitated in the L, S and C bands, including the 3.8-4.2 GHz spectrum range defined as the 'Innovation Spectrum Frequency Range 1' in the proposed framework, which in turn can accelerate ICASA's ability to meet its objective to establish universal connectivity.

3. This new framework should allow spectrum bands to be licensed for D2D and other operations, while requiring operators to achieve operational service targets or performance metrics within a reasonable timeframe to retain the attributed license. Such criteria can address coverage for a percentage of the total population, businesses, land mass or bandwidth/throughput as appropriate for the defined service. As an operator reports growth in the services offered resulting in capacity

constraints or informs ICASA of the intent to offer additional services and capabilities, ICASA can consider the allocation of additional spectrum. Critically, to foster competition and innovation and encourage the efficient utilisation of spectrum, ICASA should aim to adopt and implement '*use it or lose it*' principles as operators should not be able to retain their licenses if no meaningful or insufficient service.

4. ICASA should develop and consult on new rules aimed at facilitating MSS access to the proposed sharing framework and incorporate these rules into the proposed regulation. SpaceX would be happy to work with ICASA and contribute to this process.