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Independent Communications Authority of South Africa
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Re: Comments on the Draft National Radio Frequency Plan 2025

Kuiper Systems LLC, a wholly owned subsidiary of Amazon.com Services LLC (collectively, **Amazon**), respectfully submits these comments in response to the Independent Communications Authority of South Africa (**ICASA**)'s Draft National Radio Frequency Plan 2025 (**Draft Plan**). Amazon commends ICASA for its efforts to align its frequency allocations with International Telecommunication Union (**ITU**) resolutions adopted at the 2023 World Radiocommunication Conference (**WRC-23**) and supports tailored inclusion of Footnote 5.517B in the National Table of Frequency Allocations. In so doing, ICASA will promote not only further international harmonization, but also the deployment of innovative satellite connectivity services in the country. As ICASA prepares for the 2027 World Radiocommunication Conference (**WRC-27**), Amazon encourages ICASA to support studies and agenda items that will further advance these services.

I. Background

Amazon's Project Kuiper will bring high-speed, low latency broadband to unserved and underserved communities globally, including in South Africa. Amazon began launching its constellation of non-geostationary satellite orbit (**NGSO**) fixed-satellite service (**FSS**) satellites in low earth orbit (**LEO**) (**Kuiper System**) in April 2025.[1] Since committing to invest over 10 billion U.S. dollars in the Kuiper System, Amazon has made significant strides toward deployment, including the continued expansion of its terrestrial infrastructure and unveiling of innovative customer terminals (**CTs**) that will offer high performance in small form factors and at affordable price points. Amazon plans to begin offering commercial service in certain areas of the world this year, and will expand coverage as it continues to deploy the Kuiper System, further advancing its goal of providing affordable, accessible, and high-quality broadband services to residential, governmental, and enterprise customers in South Africa and abroad.

[1] On April 28, 2025, Amazon successfully launched Project Kuiper's first 27 satellites. *See United Launch Alliance Successfully Launches Amazon's First Operational Satellites*, ULA Launch Alliance, LLC (April 28, 2025), https://newsroom.ulalaunch.com/releases/united-launch-alliance-successfully-launches-amazons-first-operational-satellites.

II. Comments on the Draft Plan

A. Footnote 5.517B and Resolution 123 (WRC-23)

Amazon supports ICASA's alignment of spectrum allocations for FSS operations with the standards developed by the ITU during WRC-23. Flexible access to and international alignment of satellite Ka-band spectrum is essential for deployment of FSS and Earth station in motion (**ESIM**) service offerings. Harmonization of the National Table of Frequency Allocations by ICASA will therefore facilitate the delivery of satellite connectivity services, reduce barriers to entry, and encourage broad participation of NGSO systems in South Africa. These outcomes will, in turn, benefit customers in South Africa through increased affordability and customer choice in broadband services.

In particular, Amazon respectfully encourages ICASA to harmonize national allocations of spectrum for ESIM communicating with NGSO systems consistent with the spectrum allocation for ITU Region 1. Amazon supports updates to South Africa's National Table of Frequency Allocations to include Footnote 5.517B[2] and, through reference, Resolution 123.[3] This will enable deployment of aeronautical ESIM (**ESIM-A**) and maritime ESIM (**ESIM-M**) applications in the 17.7-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) bands. Amazon also urges ICASA to: (i) update the "Typical Applications" column of the National Table of Frequency Allocations for frequency band 17.7-18.1 GHz to reflect the permitted operation of FSS ESIM, and (ii) include reference to Resolution 123 in the "Notes and Comments" column for frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, 27.5-29.1 GHz, and 29.5-30 GHz.

Considering that ICASA has already allocated its Ka-band for the operation of FSS ESIM in connection with geostationary orbit (**GSO**) systems and recognized that the technical and operational conditions of Resolution 169 (WRC-19) sufficiently protect incumbent terrestrial services in the Ka-band, Amazon agrees with ICASA's proposal to support Resolution 123 as it provides for similar or identical protections. For example, both GSO ESIM Resolution 169 and NGSO ESIM Resolution 123 reflect the same limit of a maximum effective isotropic radiated power spectral density towards the horizon of 24.44 dB (W/14 MHz) for ESIM-M.

Given the global nature of NGSO operations, ICASA's alignment of NGSO ESIM regulations with ITU standards reduces barriers to entry, enables operators to design and produce high-performance, affordable customer terminals at scale, facilitates broader deployment of innovative maritime and aeronautical ESIM technology, and ultimately improves global access to connectivity services. In light of the benefits of harmonization, Amazon does not believe that additional operational restrictions should be imposed on ESIM activities, as Resolution 123 establishes a conservative ceiling that amply protects incumbent services.

[2] See ITU WRC-23 Final Acts, Article 5, MOD 5.517B.

[3] *See* ITU WRC-23 Final Acts, Res. 123 (WRC-23). Resolution 123 establishes international standards for NGSO aeronautical and maritime ESIM ("ESIM-A" and "ESIM-M," respectively) operations and provides a strong foundation for cross-border coordination and interference management internationally.

B. Tailored Application of Annex 1 to Resolution 123 (WRC-23)

Amazon encourages ICASA to tailor its implementation of Annex 1 to Resolution 123 (WRC-23) based on the deployment of terrestrial services in South Africa. Annex 1 contains provisions, including effective isotropically radiated power (**EIRP**) and power-flux density (**PFD**) limits, designed to protect terrestrial services in the 27.5-29.1 GHz band from co-frequency NGSO FSS ESIM-A and ESIM-M services.[4] Amazon therefore encourages ICASA to implement Annex 1 of Resolution 123 **only** in the 27.5-**28.35** GHz band where NGSO FSS earth stations are co-frequency with terrestrial system stations.[5] A tailored approach to the implementation of Annex 1 would enhance ESIM-A and ESIM-M services in South Africa while protecting terrestrial services.

C. ESIM Licensing Framework

Amazon recommends relying on international and regional frameworks for ESIM licensing. The technical values adopted by the Electronic Communications Committee ("ECC") of the European Conference of Postal and Telecommunications Administrations ("CEPT") in Decision 15(04),[6] for example, provide helpful foundations for national NGSO ESIM licensing regimes as they consider realistic operational parameters and include the land ESIM (**ESIM-L**) application. Studies carried out by the CEPT have concluded that ESIM-L should "not raise any additional interference concern" [7] operating in the bands available for uncoordinated FSS earth stations, because ESIM, just like uncoordinated FSS earth stations, may operate in any location.[8] Indeed, ESIM-L, like ESIM-A and ESIM-M, are permitted to operate with an exemption from individual licensing in Europe in the 17.3-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30.0 GHz (Earth-to-space) bands pursuant to ECC/DEC/(15)04, provided that ESIM-L terminals comply with the Decision's conditions, including PFD limits designed to protect terrestrial services, and the member state has implemented the decision. Amazon encourages ICASA to take these studies into consideration and to permit ESIM-L in South Africa to operate under the same terms as other uncoordinated FSS earth stations in the Ka-band.

Additionally, Amazon recommends ICASA further develop a national licensing framework to include blanket licensing or license exemption for ESIM terminals—for example, a license that allows for the provision of ESIM services to an unlimited number of users without individual licensing of each ESIM terminal so long as the terminals operate under technically identical characteristics. Amazon also urges ICASA to consider exempting from additional licensing requirements any foreign ESIM (aeronautical, marine, or land) that are authorized already in the countries where the aircraft, vessel, or vehicle is registered and that operate consistent with the applicable operational and coordination conditions of the country in which the ESIM is transiting or visiting.

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[4] Annex 1 includes separate provisions for operations in the 29.5-30 GHz band in countries identified in ITU RR No. 5.542, which is not applicable to South Africa.

[5] Annex 1 provisions are unnecessary in the 28.35-29.1 GHz band, because, as Amazon understands, these frequencies are not utilized for Mobile Service in South Africa, and Fixed Service deployment in the band is limited.

[6] ECC Decision 15(04) at 2 (app. July 3, 2015, rev. Nov. 20, 2020), https://docdb.cept.org/download/1496 ("ECC Decision 15(04)").

[7] ECC Report 217 at 6.

[8] *See id.* at 6, 13.

III. Preparation for WRC-27

Amazon encourages ICASA, in preparation for WRC-27, to support studies and agenda items that will further advance satellite connectivity. To maximize the benefits of NGSO systems, Amazon invites ICASA to support studies to re-examine outdated rules governing spectrum sharing between NGSO and geostationary satellite orbit (**GSO**) systems. The ITU EPFD limits provided in Article 22 of the Radio Regulations were adopted over 25 years ago (1997-2000) when commercial NGSO communications technologies were still nascent. The limits are over-protective of GSO systems, restricting unnecessarily the capacity of NGSO systems like Project Kuiper and increasing operational costs. Updating these limits to take account of major advances in NGSO system technology and spectrum sharing capabilities over the past 25 years will enable NGSO systems to achieve their full potential, connecting unserved and underserved communities worldwide. The spectral and infrastructure efficiencies stemming from EPFD limit reform would promote national interests through increasing productivity, proliferation, and sustainability of satellite broadband services. Amazon therefore encourages ICASA to investigate and build a record related to changes in the space industry since the adoption of Article 22 EPFD limits, seeking input on matters such as the current level of overprotection for GSO operations, the current corresponding constraints on NGSO operations, and the current characteristics of modern GSO reference links.

In addition to advocating for a modernized approach to EPFD limits, Amazon encourages ICASA to support the ITU allocations for satellite services in the Q/V-band. Specifically, Amazon urges ICASA to support WRC-27 Agenda Item 1.3, which proposes to allocate the 51.4-52.4 GHz frequency band for NGSO Earth-to-space communications. This frequency range has been allocated already to the FSS on an exclusive basis,[9] and allocation to NGSO systems will become particularly important for continued connectivity as other frequency bands experience congestion. Further opening of the Q/V-band frequencies, including 51.4-52.4 GHz, will expand NGSO service capacity, enabling faster and more reliable services for customers in South Africa.

IV. Conclusion

Amazon is grateful to ICASA for the opportunity to contribute to the Draft Plan and looks forward to working with ICASA to expand broadband access and increase customer choice for more households and businesses in South Africa. We welcome the opportunity to meet with ICASA to discuss these comments or any other issues of interest in this submission.

Respectfully submitted,

/s/ Madeleine Lottenbach

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On behalf of Kuiper Systems LLC

[9] ITU Resolution 162 (WRC-15).