By email: satlicensing@icasa.org.za

12 November 2024

The Independent Communications Authority of South Africa
350 Witch-Hazel Avenue, Eco Point Office
Park Eco Park, Centurion
South Africa

Attention: Mr. Mandla Mchunu

Re: Consultation on the proposed new licensing framework for satellite services, published under GN 2678 in Government Gazette 51044 of 14 August 2024
Written representations in response to the Authority's notice of intention to conduct the Inquiry

Dear Mr. Mchunu,

Kuiper Systems LLC (**Kuiper**), a wholly owned subsidiary of Amazon.com Services LLC (together, **Amazon**), welcomes the opportunity to submit these comments in response to the publication by the Independent Communications Authority of South Africa (**Authority** or **ICASA**) of the Consultation on the proposed new Licensing Framework for Satellite Services, published under GN 2678 in Government Gazette No. 51044 of 14 August 2024 (**Inquiry**).

Amazon commends the Authority's proactive approach to evaluating its satellite licensing framework, and believes that this Inquiry presents an opportunity for South Africa to update its satellite licensing framework to take into account given global and national developments in the satellite services sector.

Amazon sets out below its submissions and responses to the questions raised in the Inquiry, and encourages the Authority to consider the proposals contained in the comments below to facilitate the continued development of satellite broadband services in South Africa.

1 Background

Amazon's mission is to be Earth's most customer-centric company, and Project Kuiper is one of our ambitious projects to fulfil this mission. Project Kuiper is an initiative to increase global broadband access through a constellation of non-geostationary satellite orbit (**NGSO**) fixed-satellite service (**FSS**) satellites in low Earth orbit (**LEO**) that will provide high capacity, high-speed, low-latency broadband services to unserved and underserved communities around the world, including in South Africa.

On July 30, 2020, the U.S. Federal Communications Commission (**FCC**) issued an Order and Authorization permitting Kuiper Systems LLC to deploy a constellation of NGSO satellites (**Kuiper System**) using Ka-band frequencies.[1] On October 6, 2023, Amazon launched two (2) satellites into

[1] Kuiper Systems LLC, Order and Authorization, IBFS File No. SAT-LOA-20190704-00057 (rel. July 30, 2020) (FCC 20-102), available online at https://docs.fcc.gov/public/attachments/FCC-20-102A1.pdf; Erratum to Kuiper Systems LLC, Order and Authorization, IBFS File No. SAT-LOA-20190704-00057 (rel. September 4, 2020) (FCC 20-102), available online at https://docs.fcc.gov/public/attachments/DOC-366700A1.pdf; Kuiper Systems LLC, Order and Authorization, IBFS File No. SAT-MOD-20211207-00186 (rel. February 8, 2023) (DA 23-114), available online at https://docs.fcc.gov/public/attachments/DA-23-114A1.pdf; Kuiper Systems LLC, Order and

space as part of its mission of tests to validate the Kuiper System design and network performance. Within 30 days of sending its satellites into space, Amazon achieved a 100 percent success rate for the mission, validating key technologies that underpin the Kuiper network and moving the program another step closer toward the long-term vision of providing fast, affordable broadband to unserved and underserved communities around the world. These tests allowed Amazon to validate the architecture and design of our satellite constellation, and Amazon is on track to begin mass satellite production ahead of a full-scale deployment of Project Kuiper later this year.

There are billions of people around the world who lack access to reliable broadband. Project Kuiper's NGSO constellation will bring fast, affordable broadband to unserved and underserved communities around the world, including in South Africa. Project Kuiper will provide ubiquitous, high-capacity, high-speed, low latency broadband services to residential customers, schools, businesses, and institutions around the world, and communications to terrestrial mobile network operators, global enterprise, and government users, among others. Through Project Kuiper, Amazon will enable connectivity where it is lacking, thereby helping to close the digital divide and ensure reliable access to communications.

2 Responses to the Inquiry

Amazon understands that the Inquiry relates specifically to the spectrum licensing regime and spectrum fees, and does not seek to change the current service licensing regime in the Electronic Communications Act 36 of 2005 (**ECA**). In other words, entities must continue to operate under an Electronic Communications Service (**ECS**) licence or an Electronic Communications Network Service (**ECNS**) licence, both as defined in section 1 of the ECA, depending on the nature of the activities that they are conducting in South Africa.

We set out below our submissions to the Inquiry and provide responses to the specific questions as well as general comments on the Inquiry. The headings used in this section correspond directly with the sections in the Inquiry, and the terms used in this response, unless otherwise defined in this response, are as defined in the Inquiry.

Question 1: These are the policy principles from the ATU that ICASA seeks to align with. Kindly provide comment(s) on the proposed policy principles and any further recommendations listed in the above section.

Amazon commends and welcomes the Authority's recommendation that South Africa, as a member state of the African Telecommunications Union (**ATU**), should seek to harmonize licensing framework on a regional basis. Harmonization of such frameworks is a key element for satellite operators looking to deploy services across ATU Member States, and will undoubtedly streamline and simplify regulatory and compliance obligations. Amazon commends ICASA for taking a forward-looking approach that will go a long way towards encouraging the delivery of affordable, high-quality satellite services to users in South African and across Africa. Amazon respectfully recommends that ICASA also take into account the satellite licensing frameworks that already have been adopted in other regions (such as the Electronic Communications Committee (**ECC**) Decides in Europe) as guidance to inform best practices on the national licensing framework to be adopted for South Africa.

Authorization, ICFS File Nos. SAT-MOD-20230228-00043 & SAT-AMD-20230613-00140 (rel. March 8, 2024) (DA 24-224), available online at https://licensing.fcc.gov/myibfs/download.do?attachment_key=26928238; Kuiper Systems LLC, Order and Authorization, ICFS File Nos. SAT-MOD-20210806-00095 & SAT-AMD-20230329-00067 (rel. April 22, 2024) (DA 24-376), available online at https://licensing.fcc.gov/myibfs/download.do?attachment_key=27625490.

Amazon further commends ICASA for the inclusion of the policy recommendation to ensure that the national satellite licensing framework include *reasonable* spectrum fees. It is critical for the deployment of satellite systems that spectrum fees be cost-based, and Amazon respectfully suggests that the Authority adopt a pricing methodology that guards against a duplication of payments of spectrum fees (e.g., where providers end up paying for the same spectrum in the case of shared spectrum or when the spectrum is used by different providers as part of a single network). Spectrum fees based on the principle of administrative cost recovery are most suited to foster the development of satellite systems aimed at bringing broadband connectivity.

Adopting a predictable fee structure will encourage investment and innovation in the satellite industry and an administrative cost-based fee structure is appropriate for spectrum access for FSS systems, where spectrum is shared between different systems. Predictable fees that are based on administrative cost-recovery will not unfairly penalise satellite operators, as spectrum is shared between different systems, and will encourage efficient spectrum sharing and access by multiple operators.

Question 2: Do you agree with the exclusions of radio navigation satellite services, amateur satellite services, earth exploration, space research satellite services and radio astronomy services indicated above and others if applicable? If not, please explain your reasoning and propose an alternative to this proposal.

We agree with the proposed exclusions of the above-mentioned services. However, we request that ICASA clarify the reason certain parts of the Ka-band are excluded from those listed in the table of available frequencies for GSO and NGSO FSS use. Specifically, Amazon respectfully requests that ICASA include in the list the 17.3 – 18.3 GHz and 18.8 – 19.7 GHz (space-to-Earth) bands as available for both GSO and NGSO FSS use, as these frequencies are allocated to the FSS on a primary basis in the National Radio Frequency Spectrum Plan, 2021.[2]

Question 3: Do you agree with the proposed approach of having a separate licence / authorisation (where applicable) for each segment of the Satellite Communication value chain? Please elaborate.

Amazon agrees with the proposed approach to have separate licensing / authorizations for each segment of the value chain. We assume the three (3) categories (i.e., Satellite Gateway Earth Station licence; User-Terminal network licence; and Registration of Space Segment) will be spectrum licences and not service licences (since ECS and/or ECNS licences are not specific to these activities). These types of licenses /authorizations generally align with the different activities that are typically conducted in the provision of satellite services.

Amazon commends ICASA for clarifying in the Inquiry that the Registration of Space Segment is not a license but, rather a registration regime for space operators who intend to include the territory of South Africa in their service area. Most countries around the world do not require Landing Rights for foreign licensed satellite systems to "land" signals in their country, and ATU-R Recommendation 007-0 recognizes the need for countries to minimize Landing Rights requirements on satellite operators "to offer a wide array of service offering to citizens and create a competitive market."[3] The registration requirement will ensure that innovative services, like NGSO broadband connectivity, can be rapidly deployed in South Africa, to the benefit of consumers.

[2] Both GSO and NGSO FSS systems make use of these frequencies in ITU Region 1 and around the world.

[3] *See* Section 4.2.2 of ATU-R Recommendation 0007-0, Promotion of Rural ICT connectivity In Africa (October 2023), available at https://atuuat.africa/wp-content/uploads/2024/07/ATU-R-Recommendation-007-0-Promotion-of-Rural-ICT-connectivity-in-Africa.pdf.

The Inquiry, however, does not make clear whether the Satellite Gateway Earth Station licence and User-Terminal Network licence are (i) different types of spectrum licences; or (ii) different types of service licences, since these are the only two broader categories of licences currently provided for in the ECA. All that the descriptions of these licences say is that both sets of licences will authorize the holder to use spectrum. As such, we assume that both of these licences are for different types of spectrum licences and that relevant entities that provide service will also need to obtain the requisite service licences (ECS and/or ECNS). Amazon kindly requests that the Authority clarifies this point.

Amazon kindly proposes that the Registration of Space Segment not preclude foreign entities from complying with this requirement. In other words, it should not be a prerequisite or a requirement that operators set up local entities in South Africa to register a space segment with the Authority. Amazon assumes that this is the intention of the Authority given that the Inquiry notice itself recognises that South Africa does not currently have a Landing Rights regime and the Inquiry provides that a list / database, which will include registered *foreign* satellite capacity providers, will be published on the Authority's website.

Question 4: Please provide your comments on the proposals in the preceding paragraph and the duration of the Gateway Earth Station licences.

Amazon supports the proposal to authorise a Gateway Earth Station licence for a validity period of five (5) years from the effective date of the license, with successive *rights* of renewal for additional five (5) terms, at the expiration of each term granted. Further, Amazon supports the proposal to grant Satellite Gateway Earth Station licences in a manner that allows for the gateway stations to be located outside of the territory of South Africa. This approach reduces infrastructure costs and allows for effective service provision taking into account regional service delivery considerations. This would also go a long way in ensuring that operators reduce their operational costs (which are typically passed on to end-users) and are able to provide satellite services to end-users in a cost-effective manner.

Question 5: Please comment on the above-mentioned alternative proposals to levy the spectrum fees for Gateway Earth Stations and indicate your preferred option. The Authority understands that there are other spectrum fee calculation methodologies used elsewhere in the world. Please give details of the methodologies which you believe would be most suitable for South Africa.

Amazon supports the proposal to introduce a high throughput satellite factor of between 0.3 and 0.1, as proposed in the Inquiry. Amazon also supports the proposal to apply spectrum fees for Gateway Earth Station licences on a per licence basis, as opposed to a per earth station basis, and agrees with the Authority that *"some non-geostationary satellite systems use a cluster of earth stations connecting to a single network in one location"* using the same frequency bands.

Further, Amazon will like to draw the Authority's attention to the common scenario where an NGSO operator wishes to engage with multiple licensees in South Africa for the operation of several gateway earth stations with the same technical characteristics, communicating with the same NGSO satellite network system and using the same spectrum. We respectfully request that the Authority consider this a cluster of gateway earth stations. Notwithstanding that the gateway stations may be sited in different locations, these stations will form part of the same network potentially operated by multiple licence holders as one network. Amazon understands that, under the current regime, if there are multiple operators of gateway earth stations, each must hold a spectrum licence. It is not clear how one entity could hold a spectrum licence that multiple operators can operate under, since leasing or letting of spectrum licences is not provided for under the current regulations.

Amazon respectfully proposes that ICASA adopt the three (3) levy models in the Inquiry (i.e., gateway station fee formula, variable fee per MHz depending on frequency band, and gateway earth station spectrum fee on a per licence basis) since these models are not mutually exclusive but, rather, complementary to each other.

Question 6: Kindly comment on the section above and on the proposal for blanket licensing with a fee for a set number of terminals under a new proposed licence regime to be referred to as "Satellite User Station Network Licence". If possible, please provide a breakdown of the number of terminals with the corresponding spectrum fee values in South African Rands.

Amazon agrees with ICASA that there is significant merit in introducing a blanket licensing requirement for a set of user terminals in South Africa. This approach is in line with international best practices to ensure that services are provided in an effective manner to end-users and, as Amazon understands it, is also consistent with how the licensing of ECS works in the ECA.

Amazon will also like to propose an amendment to the nomenclature of the proposed new licence regime, by replacing 'Station' with 'Terminal', as follows: "*Satellite User Terminal Network Licence*".

Question 7: Kindly comment on the appropriateness of using regulation 37 of the ICASA radio regulations ("Recognition of licences issued by other countries") to recognize ESIM licences issued by other countries.

Amazon agrees with ICASA that an aeronautical ESIM (i.e., ESIM on aircraft) that is already licensed in another country and is temporarily visiting South Africa should be exempt from requiring a licence. Amazon respectfully suggests that the proposal in the Inquiry to subject an aircraft that is already licensed in another country or jurisdiction to a "light touch" regulatory regime (i.e., subjected to a simpler regime of registration requirement) on arrival to South Africa, should be removed.

Amazon respectfully invites the Authority to expand the licence exemption to both maritime and land ESIM that are already licensed in another country and that are temporarily visiting South Africa. This aligns with the International Telecommunications Union's (**ITU**) recognition that there are three (3) types of ESIM ("ESIM on board aircraft (aeronautical ESIM), ESIM on board ships (maritime ESIM), and ESIM on board land vehicles (land ESIM)").[4] We also respectfully recommend that the Authority enter into mutual recognition agreements outside of the Communication Regulators' Association of Southern Africa (CRASA) region with as many jurisdictions as possible to better give effect to Regulation 37 of the Radio Frequency Spectrum Regulations, 2015, published under the ECA.

Amazon also agrees with the proposed model for user terminal fees, as proposed in the Inquiry. However, the Authority should clarify whether ESIM gate-to-gate and/or port-to-port services will be permissible, or whether these services will be subject to any restrictions regarding altitude (for aeronautical ESIM operations) or distance from shore (for maritime ESIM operations).

Question 8: Please provide your comments and details of the best practices in other jurisdictions to fulfil the intentions of the Authority as indicated in the above section. Furthermore, considering the provision set out in the Astronomy Geographic Advantage (AGA) Act of 2007, and the requirements of the Radio Quiet Zone, what measures and techniques do you propose to be employed in mitigating the possible interference that may be caused by the satellites within the Astronomy radio frequency bands in South Africa?

[4] See Satellite issues: Earth stations in motion (ESIM) (itu.int).

Amazon agrees with the proposal to introduce a "List of Authorised Space Stations", as contemplated in the Inquiry. The timeframe within which the Authority will give effect to the registration should be no later than ten (10) working days from date of submission of the requisite documentation to effect such registration, and that this timeline should be strictly adhered to in practice.

Question 9: Please provide proposals on the role the Satellite operators can play in ensuring that broadband connectivity reaches the areas of the country in terms of community networks with Satellite connectivity as a backhaul.
Kindly provide a regulatory solution that can be applied by Satellite operators to address the shortcomings of terrestrial networks in providing to unserved and underserved areas of the country. This may include collaboration with government programs to reach out to those unserved and underserved areas of the country.

NGSO systems, such as Project Kuiper, have the capability to provide affordable, high-quality broadband connectivity to end-users in their service areas, including in remote areas where existing infrastructure may not be available or adequate for their connectivity requirements. Such systems also provide backhaul capabilities to licensed telecommunications operators so that these operators can extend the reach of their terrestrial networks in a cost-effective and efficient manner, to reach areas beyond their current service coverage area and to provide services to previously unserved and unreached end users. Amazon believes that NGSO systems and the type of service offerings they support will help South Africa achieve its national goal of broadband for all, and access to data for all. Broadband satellite operators can also partner with locally licensed telecommunications operators and service providers (as they typically do) to increase the variety of services available to end users across South Africa. In doing so, this promotes competition in the sector, and will help increase the range and quality of services available to end users in the country.

General comments

Section 1: Interpretation

There a few definitions which Amazon suggests ICASA can expand on in some ways to more accurately reflect operational workings of the satellite systems in practice. We have not set out the definitions themselves in this section, but instead rely on and reference the Interpretation section of the Inquiry.

"Earth Station in Motion (ESIM)": Amazon respectfully submits that this definition should be expanded to include the types of moving platforms that are typically used by satellite operators for such purposes, including **land, maritime, and aeronautical**. This is consistent with the ITU's categorisations of ESIM,[5] and is also consistent with the way many Administrations across the world categorise ESIM.[6] Amazon respectfully suggests the following definition:

> "Earth stations placed on moving platforms, *such as on-board ships (maritime ESIM), aircraft (aeronautical ESIM), or land vehicles (land ESIM),* that communicate with geostationary-satellite orbit (GSO) or non-GSO systems operating in the fixed-satellite service (FSS)."

"Satellite Capacity Provide": The definition should be amended to read as Satellite Capacity Provide*r*.

[5] Id.

[6] See, e.g., 47 CFR § 25.228 in the United States, which defines the operating and coordination requirements for three different types of ESIM: earth stations aboard aircraft (ESAA), earth stations on vessel (ESV), and vehicle-mounted earth stations (VMES). In recent years, the European Conference of Postal and Telecommunications Administrations (**CEPT**) has developed a number of harmonization decisions on the exemption from licensing and free circulation of satellite terminals for the use of ESIM to provide connectivity on board aircraft, ships and vehicles (see ECC/DEC/(15)04).

"Space Segment": Amazon notes that this definition does not include the satellite itself, although satellites are included in the definition of "Space Station". Amazon respectfully suggests that the Authority consider whether "satellites" should be included in the definition of space segment, and provide clarity on what this definition is intended to cover exactly since TT&C is already defined separately in the Inquiry.

"Terminal": Amazon respectfully suggests that the defined term be amended to read as **"User Terminal"**.

"TT&C" or "Telemetry, Tracking and Command" and **"Telemetry, Tacking, and Command (TT&C)"**: Amazon respectfully suggests that the two definitions in the Inquiry be combined into one single term.

Section 2: Background

Amazon notes that the Inquiry indicates that *"LEO constellations, however, require a large network of satellites to obtain the same level of coverage due to their lower altitudes"* (Emphasis ours). As a minor point, Amazon respectfully suggests that the Authority replace the word "however" with "on the other hand". The existing language, as currently used, connotes an unintended negative impression of LEO satellite networks as compared to other types of satellite networks. Therefore, Amazon proposes an amendment as follows:

> *"LEO constellations, on the other hand, require a large network of satellites to obtain the same level of coverage due to their lower altitudes."*

Section 3: Objectives

Amazon commends and welcomes the Authority's objectives as stated in the Inquiry, especially the objectives to develop transparent and streamlined regulatory frameworks that provide certainty, develop procedures for ESIM and other user terminals, and a review of spectrum fees for new satellite systems. We look forward to engaging with the Authority on these particular aspects as this process continues to unfold.

Section 7: Satellite Gateway Earth Stations

The Inquiry proposes that applicants or holders of Gateway Earth Station licences be treated under the Private Electronic Communication Network (**PECN**) licence exemption regime, and they will only require an individual ECNS licence when they provide additional services to end-users. Amazon commends ICASA for this proposal, which will remove the bottlenecks associated with deploying operations in the telecommunications sector as well as create regulatory certainty for satellite operators.

Innovative NGSO systems make use of a spectrum efficient model where multiple ground stations operate with the same frequency bands to deliver high throughput and therefore give access to high quality of service for the end users. It would therefore be beneficial to the development of the satellite eco-system in South Africa if the proposed single network license could include/incorporate gateway stations that are owned/operated by either one or multiple different licensed operators. In this case, the radio spectrum authorisation would be attached to the single network license, thus allowing all the gateway stations and customer terminals in the network to benefit from/make use of the one radio spectrum authorisation for gateway spectrum and customer terminal spectrum. This would offer the advantages of (i) reducing the administrative burden for the regulator, (ii) promoting fair cost for the network license owner, (iii) therefore enabling a fair playing field between systems that use shared

radio spectrum as part of a network of disparate gateway stations and customer terminals and those systems that use radio spectrum as single gateway stations. In turn, this method of licensing would lead to reduced cost of deployment, ultimately benefiting customers in South Africa who will benefit from investments in affordable broadband deployment, especially for underserved and low-income communities in the country. As an additional network externality, this method of licensing allows partnerships between the network license holder and licensed local operators to further benefit the economy of South Africa.

Section 8: National and International Coordination

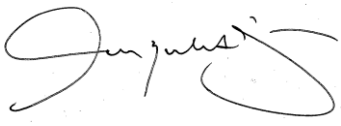
Amazon agrees with the general proposals regarding coordination procedures in the Inquiry. However, Amazon respectfully requests that the four (4) months' timelines provided for coordination process to be completed should be reconsidered by ICASA. Frequency coordination is a complex and sometimes delicate process that can require long periods of time and operational experience to resolve outstanding issues. A more pragmatic approach would be for the Authority to rely on ITU procedures and principles designed to allow operations when frequency coordination under the ITU framework has been initiated but not yet completed. Amazon supports a regulatory approach that grant of a license application should not be subject to completion of frequency coordination. Amazon respectfully suggests that coordination efforts between licensees must be done in good faith and, if operators cannot reach agreement on coordination, the Authority implement procedures similar to those used by the ITU on a non-interference / non-protection basis, to ensure operators are still able to continue operations while, at the same time, recognizing that such operations may be subject to conditions. Amazon understands that similar processes are already contemplated under Regulation 20 of the Radio Frequency Spectrum Regulations, 2015, published under the ECA.

3 Conclusion

Amazon commends the efforts of the Authority efforts to modernize the satellite regulatory framework in South Africa, and welcomes the publication of the Inquiry. A flexible and robust regulatory framework that aligns with industry developments will give room for cutting-edge technological investment, robust service offerings, and expanded coverage throughout South Africa.

Amazon remains at the disposal of ICASA should the Authority need to discuss any aspect of this submission, or if it has any questions or requires any information relating to these submissions. We look forward to engaging further in this process

Sincerely,



Gonzalo de Dios
Head, Licensing and International Regulatory Affairs
Project Kuiper
dediosg@amazon.com