

To:

**Independent Communications Authority of South Africa**

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**Sateliot's answer to ICASA's public consultation on the  
on the proposed new Licensing Framework for Satellite  
Services**

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## Introduction

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Satelio IoT Services, S.L. (hereinafter Sateliot) is a pioneering Spanish company established in 2018, dedicated to revolutionising global narrowband Internet of Things (IoT) connectivity. Leveraging a constellation of small satellites in Low Earth Orbit (LEO) and utilising the 5G NB-IoT NTN 3GPP Standard Protocol, Sateliot aims to provide cost-effective connectivity for IoT devices and applications worldwide. After the launch of two test satellites in 2021 and 2022, we recently launched our first 4 commercial satellites in August 2024, with the aim to start providing commercial services by Q1 2025.

This innovative approach ensures that more terrestrial IoT devices can seamlessly transition to satellite capabilities when terrestrial coverage is unavailable. Our innovative approach involves providing our capacity to Mobile Network Operators (MNOs) via standard GSMA roaming agreements, who then connect end-user devices, extending their footprint in out-of-coverage areas. By adopting this supplemental connectivity model, Sateliot addresses the pressing challenges of accessibility and continuity of IoT services in underserved and partially served areas which are prevalent in interior and rural parts of South Africa. The transformative potential of IoT technologies extends across various industries, including agriculture, livestock, maritime, transport and logistics, energy, and infrastructure. With its large coastline and expansive inland rural areas, South Africa presents a unique opportunity for NTN IoT to have a meaningful impact.

Sateliot appreciates the opportunity to participate in this public consultation on the proposed new Licensing Framework for Satellite Services. As a leading innovator in satellite-based Internet of Things (IoT) solutions, we are deeply committed to contributing with our expertise and insights to ensuring strong IoT connectivity to all South Africans.

Hereafter, we submit our comments on some of the questions presented in the proposed new Licensing Framework for Satellite Services.

## Comments

### **Question 1: Kindly provide comment(s) on the proposed policy principles and any further recommendations listed in the above section?**

We acknowledge, commend and support measures to harmonise South Africa's licensing framework with the principles of the ATU and the continent. This is particularly relevant for satellite operators such as Saletiot, both at the operational level (in terms of network authorization and activation of our services) and to achieve the ambitious service deployment milestones we have for South Africa and the continent as a whole.

As we endeavour to facilitate affordable IoT connectivity where terrestrial networks find it uneconomical today, we appreciate that the pace of innovation presents classification and procedural challenges to many administrations. As such, we are advocates of the importance of establishing and re-adapting regulatory frameworks to be as transparent as possible, so competition among operators and the added value for end users can determine eligibility criteria through the licensing process and towards utilising scarce valuable spectrum.

We appreciate that some of these principles envisioned making connectivity not just affordable but accessible to all, what we call massive deployment. For this, it is paramount to understand that recognised standards from bodies such as 3GPP facilitate this goal; and equally, that new systems require blanket-type licences to service a large amount of devices roaming in and out of our NTN networks supplementing terrestrial coverage. These devices, which already operate under cellular networks, are certified and type approved, which makes it sensible to allow satellite operators such as Sateliot to service them without further registration and without any negative implications thereafter.

Added to the above there are two spectral matters that are particularly relevant for our NB IoT system, namely the ability to access limited portions of MSS spectrum in the S Band (those identified under 3GPP Release 17 shown below), as well as the fees related to spectrum usage. On the latter, given the limited 1MHz duplex spectrum requirements for full servicing capabilities, we believe that Sateliot and other LDR systems should certainly contribute their fees according to their bandwidth requirements. In this vein, and in our particular case a 3GPP-standard based operator, such portions of spectrum owe to be in the designated bands below. It is for this reason that we encourage ICASA to consider reserving portions of this spectrum for the deployment of LDR MSS systems, as it has been the case in other jurisdictions around the world.

NTN Satellite Band	Uplink (UL) - UE Transmit	Downlink (DL) - UE Receive	Duplex mode	Space Duplex
255	1626.5 Mhz – 1660.5 Mhz	1525 Mhz – 1559 Mhz	FDD	101.5 Mhz
256	1980 Mhz – 2010 Mhz	2170 Mhz – 2200 Mhz	FDD	190 Mhz

*3GPP Release 17 bands for 5G NB-IoT NTN (MSS)*

Altogether, we offer the above technical and regulatory considerations with the belief that they align with ATU's principles and goals. Making satellite connectivity affordable, accessible and integrated in the wider telecommunications ecosystem of the Republic of South Africa are our top priorities.

**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.**

We support this initiative of ICASA. The satellite ecosystem has diversified with new services, operating models and business strategies. The old licensing regime has become outdated in the wake of industry innovation. The approach of a dedicated licensing model to specific service providers should ensure an easier route to market in South Africa.

However, we are of the view that ICASA could go further in delineating the satellite operator and service sector. The broad categories of Satellite Gateway Earth Stations and User-Terminal Network license do not account for infrastructure or B2B connectivity service providers.

Sateliot does not manufacture or operate any IoT device, nor operate gateways. Our relationship with the market is that of a B2B connectivity provider. Our local MNO partners interact directly with the end-users. The IoT devices which Sateliot connects to its network are often third-party devices not manufactured or operated by the MNO either.

This type of relationship, while currently novel, is likely only going to expand as new space segment operators enter the market. It is not unforeseeable that other D2D providers, whether providing voice, messaging, internet or IoT connectivity, will not have similar arrangements with MNOs.

The satellite industry is changing with never-before-seen collaboration between terrestrial network providers and non-terrestrial network providers. This collaboration has resulted in new services and increased benefits to consumers the world over. One such example is the collaboration to facilitate direct-to-device, and within this mode of supplemental connectivity, more specifically the provision of 5G NTN IoT capacity to terrestrial network providers.

While we support the licensing approach ICASA has proposed, we recommend this be taken one step further. Licence frameworks should envision TN-NTN collaboration from the stage of application, particularly on service delivery and network handover conceptualization. Doing so, and allowing a degree of procedural flexibility for integrated TN-NTN systems may reduce the bureaucratic burden on both the regulator and the providers while also decreasing timeline for service deployment.

**Question 6: Kindly comment 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**

For the reasons presented in Question 1, Sateliot is supportive of a blanket licence approach in alignment with ICASA. While we do not own or operate user equipment (UE), a blanket licensing approach is advisable towards lowering complexity and entry barriers for massive deployment of low-cost type-approved and IMT-qualifying IoT terminals.

Sateliot connects standard IoT devices to its 5G NB-IoT NTN satellite network using standardised protocols from 3GPP. As mentioned above, these devices, which already operate under cellular networks, are certified and type approved, which makes it sensible to allow satellite operators such as Sateliot to service them without further registration without negative implications..This approach is novel but growing and is likely to see other operators leveraging it for the provision of other services.

We propose the license framework is amended to recognise these new technological and market developments and the new cooperation between NTN and TN operators.

**Question 8: Please provide your comments and details of the best practices in other jurisdictions to fulfill 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?**

Under Section 10 of the current consultation, ICASA has excellently argued the rationale behind updating its approach to the registration and authorization of foreign satellite systems. We commend the thorough analysis and justification for not introducing a Landing Rights system, but the registry of space networks instead, in accordance with ITU notification procedures and requirements. Sateliot, a German-notified system, compliant with ITU coordination processes and progressing as such, is pleased with the approach taken, and the additional considerations under Annex A that emphasises that non-concluded coordination will not stall approval of systems nor the licensing process as a whole.

ICASA's intention to allow new foreign satellite operators to apply for spectrum, whether in partnership with local iECNS or independently is well received. Under the proposed registry system and subsequent application for spectrum resources in accordance with Section 6 typologies, Sateliot would proceed as a foreign operator submitting spectrum assignment applications for portions of spectrum identified in the 3GPP Release 17.

Nevertheless, as expressed in our response to Question 3, we identify that for the licensing of systems providing NTN supplemental coverage for terrestrial networks, further distinctions of the entirety of the networks towards full licensing is required. In other words, avoiding duplication between both operators (MNO and SO), particularly on ECS / ECN requirements.

For the protection of existing services, incumbent operators and the Radio Quiet Zones, Sateliot believes the best approach is the adoption of tested standardised models, such as Release 17 by 3GPP. Employing standardised technology ensures that deployments are safe, sustainable and efficient.

**Question 9.2: 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.**

**Spectrum under partnerships via GSMA Roaming Agreements**

Sateliot's common approach to licensing as specified in response to Question 9.1 is to deliver our system supplemental NTN capacity via standard GSMA Roaming agreements, and operating within assigned MSS spectrum to Sateliot as a foreign operator.

Nevertheless, considering ICASA's current consultation and mentions of potential collaboration with local iECNS such as MNOs, we propose that should spectrum for supplemental NTN coverage under said GSMA Roaming agreement be accessible via a joint license application SO-MNO; appropriate linkage to the servicing constellation(s) to the local iECNS be reflected and part of the conditions of said joint applications.

## User adoption reports

Standard user adoption reports could assist in demonstrating the uptake of satellite services and how many users a provider has. IoT, particularly satellite IoT, however is not typically a consumer product. It is most impactful in industrial, agricultural and commercial applications. Its use in agriculture is most beneficial in rural farming areas to assist farmers in making informed decisions regarding their crops, watering, harvesting and soil monitoring. Government can assist in uplifting rural farmers and partnering with IoT manufacturers to provide upskilling on device use and most importantly how to get the best out of the data. Satellite providers in this instance serve only as the network connectivity provider.

## Other Considerations:

### **I) Consideration of 3GPP Release 17 identified RF**

Sateliot notes that in Section 5 *Scope of the Inquiry with respect to Radio frequency bands and services*, ICASA distributes relevant satellite RF in the MSS and FSS as per the National Table of Frequency Allocations (NTFA) - in this table the 2GHz bands are exhibited commencing at 2000 MHz, and only referencing its legacy usage.

In this regard, Sateliot wishes to draw ICASA's attention to the distribution of said band across Region 1 and in alignment with Art 5 of the ITU-RR, which commences at 1980 MHz in all Regions.

Additionally, and as explained in our response to Question 1, portions of the 2GHz have been studied, recognized and implemented as part of 3GPP's Release 17 for NB NTN. In a similar fashion to the description of listed L Band frequencies as being "Narrowband MSS", we would encourage ICASA to apply the same methodology to the designation of portions of the 2GHz Band for Narrowband MSS.

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*3GPP Release 17 bands for 5G NB-IoT NTN (MSS)*

### **II) Local infrastructure waiver, provided operators can showcase appropriate system architecture**

Sateliot supports ICASA's consideration of local infrastructure waivers when applicable. The changing nature of the satellite industry and the collaborative approach to service delivery means that smaller satellite operators can provide services and generate revenue without having to invest heavily in ground segment infrastructure.

Sateliot utilizes third-party gateways for the ground segment network requirements. By partnering with third-party providers our operations are significantly more efficient and cost-effective. Third-party ground station providers are specialized in ground segment operations, ensuring that the infrastructure supporting our services is reliably managed. Sateliot's constellation uses store and forward technology, meaning that our satellites do not need to maintain constant visibility of a gateway to operate. This capability, combined with strategically positioned ground stations worldwide, ensures full global coverage, faster

deployment, and the flexibility to scale our services in response to market demand. We understand the importance of data management and lawful interception requirements globally for reasons of security and privacy. Our ground-segment infrastructure partners guarantee that our network security is enhanced and our overall system architecture can meet compliance requirements. Additionally, according to GSOA's paper on national gateways,<sup>1</sup> Ground stations are no longer required in every country due to advancements in data technology. Functions such as encryption, decryption, and data routing, which were traditionally handled by local ground stations (Teleport Gateways), can now be managed at a Point of Presence (PoP) or Point of Interconnect (PoI) outside the country.

**III) Cross border agreements with neighbouring countries for transitioning/temporary roaming IoT devices.**

The primary motivating factor for the use of satellite connected terminals is the ability to have ubiquitous coverage, especially in remote and border regions of a country. It is of significant benefit to all parties where bilateral and multilateral agreements are established between bordering countries for roaming devices. IoT devices are especially susceptible to cross borders as they operate in shipping, aeronautical and logistics operations. These devices will likely regularly cross into and out of South Africa's territorial waters and land borders. Ensuring that end-users may freely enter and exit South Africa for temporary roaming with these devices ensures users confidence, wider adoption and a healthy growing satellite IoT market.

## Final remarks

We thank ICASA for the opportunity to participate in this important consultation. We truly appreciate the direction Authority is taking towards adapting and enhancing its satellite regulatory framework, while accommodating evolving technologies and services.

We remain available to support ICASA in finalising this framework and are eager to provide services in South Africa. We look forward to collaborating further and contributing to the growth and development of the telecommunications landscape in South Africa.

Sincerely,



**Elisabet Fonalleras**  
Head of Regulatory Affairs  
Satelio IoT Services, S.L.

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<sup>1</sup> GSOA. (2024). Rethinking Local Gateways – A Satellite Industry Perspective. The Global Satellite Operators Association. Available at:  
<https://gsoasatellite.com/wp-content/uploads/GSOA-National-Gateway-Paper-Aug-24.pdf>.