23 October 2025

From : Plan-S Space and Satellite Technologies Inc. ("**Plan-S**")

To : EASTERN CARIBBEAN TELECOMMUNICATIONS AUTHORITY ("**ECTEL**")

Subject: Plan-S response to the ECTEL's Consultation Paper on NNS ("**Consultation Paper**")

Dear Sir or Madam,

On behalf of Plan S Satellite and Space Technologies Inc. (Plan-S), we extend our sincere gratitude for the opportunity to contribute to ECTEL's Consultation Paper. We commend ECTEL's proactive and forward-thinking approach for improving access to electronic communications services.

Please find enclosed Attachment, which outlines our responses for your consideration. We remain at your disposal for any further discussions or clarifications and are eager to collaborate with ECTEL on matters to which we can contribute.

Respectfully submitted,

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Attachment: Plan-S's Response to the Consultation Paper

Introduction

The expansion of global connectivity has become a strategic priority for both governments and industries, as digital infrastructure increasingly reinforces economic growth and societal development. However, significant portions of the Earth's surface remain unserved by terrestrial communication networks due to geographical, technical, and economic limitations. In this context, Non-Terrestrial Network (NTN) technologies represent a critical enabler of global connectivity for IoT (IoT-NTN) and handsets (NR-NTN).

While NR-NTN represents the extension of connectivity primarily for handsets based on 3GPP standards through non-terrestrial networks, IoT-NTN refers to this capability for IoT devices, enabling seamless, resilient, scalable, and interoperable satellite connectivity beyond the reach of terrestrial networks. It typically involves standardized solutions based on 3GPP, adapted to support satellite communications and ensure interoperability with other networks built on the same standard. In addition to 3GPP-based solutions, satellite operators also employ other terrestrial technologies, such as LoRaWAN, to provide power-efficient, interoperable, global, and resilient connectivity to their customers, which is also referred as IoT-NTN.

Given these capabilities, IoT-NTN and similar NTN applications can offer significant benefits for ECTEL Member States because such states may face persistent challenges in extending connectivity due to geographical constraints, dispersed populations, and geographic isolation, which collectively constrain the reach and cost-effectiveness of terrestrial infrastructure. By integrating satellite systems, IoT-NTN can help overcome these barriers through bringing seamless and resilient connectivity, supporting digital inclusion, and enabling innovative IoT use cases in sectors such as agriculture, vessel tracking, fishing, disaster management, and environmental monitoring.

In light of the Consultation Paper, Plan-S strongly supports ECTEL's initiative to establish a dedicated licensing framework for NTN services. As a satellite operator providing satellite IoT connectivity based on LoRaWAN and 3GPP standards, Plan-S is well positioned to contribute to the development of global, scalable, resilient, affordable, energy-efficient, interoperable and sustainable connectivity across the Caribbean. Ensuring access to the market for innovative NTN service providers is essential to achieving ECTEL's goals of digital inclusion, disaster resilience, and the proliferation of advanced electronic communications technologies across its Member States.

The following sections of the response are structured in two parts. First, we provide general information on IoT-NTN and their broader category, NTN. This section outlines the operational principles and benefits of these systems, particularly their potential to enhance connectivity, resilience, and innovation for citizens and industries across the Caribbean region. Secondly, Plan-S presents its specific responses to the Consultation Paper, focusing on the proposed licensing processes, associated fees, and related regulatory considerations.

1. General Information on IoT-NTN Approaches

In recent years, the integration of IoT systems with NTN has emerged as a key enabler for achieving truly global and resilient connectivity based on global standards. With its low bandwidth requirements, IoT-NTN allows for efficient spectrum utilization, providing cost-effective, affordable solutions that extend seamless connectivity to underserved areas. This capability enhances global coverage, connecting remote areas without the need for terrestrial infrastructure, and supports critical applications such as disaster recovery and rural development. Moreover, it enables terrestrial network operators based on 3GPP and LoRaWAN standards to extend their coverage, offer backup connectivity, and unlock new revenue streams. The main IoT-NTN approaches include the use of MSS bands and SRD or class license bands.

1.1. IoT-NTN based on MSS

3GPP establishes global standards for cellular networks, including protocols that enable interoperability between satellite and terrestrial IoT systems. 3GPP standards are designed to work with various satellite constellations, including LEO, MEO, and GEO. This flexibility ensures broad coverage across diverse terrains and use cases in the Caribbean region.

Starting from Release 17, 3GPP has introduced NTN, allowing IoT devices to seamlessly roam between cellular and satellite networks using standardized hardware and protocols. This ensures devices operate across diverse infrastructures without proprietary modifications, reducing costs and simplifying deployments. This innovation has the potential to significantly support IoT penetration in rural areas by enabling seamless and interoperable connectivity for end-user devices.

NB-IoT technologies based on 3GPP Release 17 and beyond, operating in the MSS bands (e.g., 2 GHz MSS band), represent a suitable solution as they complement mobile networks through interoperability, seamless coverage and resilience. Therefore, the 2 GHz MSS band and other bands identified within 3GPP for IoT-NTN are vital for enabling innovative satellite-based MSS solutions due to their harmonized global allocation and strong signal propagation capabilities.

1.2. IoT-NTN based on SRD

We believe that SRD/license-exempt/class license bands, either the 862–870 MHz or 902-928 MHz frequency bands depending on their availability in the respected jurisdictions, are a vital resource for enabling cost-effective, low-power, and globally scalable IoT connectivity via satellite networks based on global standards. These bands, already widely used for terrestrial Low Power Wide Area Networks (LPWAN) specifically based on LoRaWAN standards, hold significant potential for seamless coverage for terrestrial networks employing the same standard through interoperability when extended to satellite services.

The extension of SRD bands to satellite services function as a form of NTN, effectively bridging gaps in terrestrial network coverage and creating new opportunities for both satellite and terrestrial LoRaWAN operators. By integrating satellite connectivity, terrestrial LoRaWAN operators can extend their network reach to rural, remote, and underserved areas, enabling seamless cross-border IoT operations. This extended coverage allows operators to support innovative use cases that were previously impractical due to connectivity limitations, such as large-scale agricultural monitoring, global asset tracking, maritime and environmental conservation projects.

Additionally, this approach is expected to enhance customer satisfaction by improving overall service availability and performance. Collaboration between terrestrial and satellite networks would further promote interoperability, boosting the efficiency and scalability of IoT applications while accelerating the adoption of global IoT standards.

Moreover, SRD-based satellite IoT provides cost-efficient and energy-efficient solutions for massive IoT deployments, thanks to the low bandwidth and power requirements. These attributes make the 862-870 MHz band or 902-928 MHz band or parts thereof particularly appealing for small-scale, low-power devices that underpin the rapidly expanding IoT ecosystem.

2. Plan-S Comments on the Consultation Paper

As indicated in the Consultation Paper, currently, there is no harmonized approach across ECTEL member states in terms of licensing and fee structuring of NTN operators as some jurisdictions NTN operators are treated as broadband operators, in the remaining jurisdictions it is different. We believe that harmonizing the licensing regime for NTN operators across ECTEL Member States to access spectrum and would be crucial for the efficient use of spectrum, encourage innovation, expand service offerings, and promote competition, ultimately benefiting all citizens.

Before presenting our detailed views, we would like to emphasize that NTN encompasses not only broadband operations but also IoT operations, as highlighted above.

2.1. Licensing of NTN Operators

Interest in the IoT-NTN and NR-NTN bands has increased significantly as this interest is driven mainly by the growing device ecosystem with the identification of these bands within 3GPP as well as their favourable signal propagation characteristics and the global allocation to MSS across all three ITU regions.

While licensing the operators, it is crucial to foster a healthy and competitive satellite service ecosystem through creating a transparent and predictable regulatory environment. Therefore, we support the ECTEL's approach set out in its **Recommendation 5.2.1** for introducing Non Terrestrial Networks and Services ('NNS') license for NTN operators (NGSO, GSO, HIBS, HAPS and other similar technologies) that intend only to offer telecommunications services directly to customers using non-terrestrial communications platforms (satellites, unmanned aircrafts, balloons, etc.) and that do not require the installation of ground-based infrastructure/facilities in the ECTEL Member States. In this regard, harmonization of the class license regime across such states will be a significant milestone.

While promoting the NNS license, the process should facilitate market entry and not impose unnecessary barriers such as establishing a local entity, local gateway or any further registration requirements.

Additionally, we would like to highlight that the spectrum should be available to realize all NTN solutions covering both NR-NTN in MS and MSS bands and IoT-NTN in MSS and license-exempt bands to create more competitive environment, enabling more affordable prices for Caribbean citizens and industries.

2.1.1. Spectrum Allocations

2.1.1.1. 2 GHz MSS Band

As spectrum management forms an integral part of the licensing framework, it is essential that such considerations also consider the specific characteristics and requirements of IoT-NTN technologies. Enabling multiple operators to share spectrum dynamically on a time basis or under static conditions, while ensuring efficiency in spectrum use, would help reduce spectrum hoarding, enhance connectivity, and lower barriers to entry for new service providers.

As a result of the increasing interest in NTN frequency bands, administrations are reconsidering spectrum plans for this band to enable the participation of a broader range of service providers, fostering innovation, competition, and service diversity. For instance, ACMA has authorized the frequency bands of 2005-2009 MHz and 2195-2200 MHz on a shared basis for the use of narrowband MSS in Australia (see here). Likewise, Radio Spectrum Policy Group (RSPG), which is a high-level advisory group that assists the European Commission, recommends in its opinion "assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027" published on February 7, 2024, proposes shared use of 2x5 MHz in the 2 GHz MSS band to address IoT/M2M demands[1].

2.1.1.2. License-Exempt Bands

Satellite-IoT operations leveraging unlicensed or license-exempt spectrum have been validated through extensive technical studies and field trials. Notably, Europe has made significant regulatory progress, as detailed in **ECC Report 357**, *"Regulatory analyses of satellite use in the band 862–870 MHz to communicate with terrestrial SRD"*. Key highlights include:

[1] RSPG Opinion on assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027.

- Operation on a non-protection, non-interference basis.
- Establishment of a Power Flux Density (PFD) threshold of -142 dB(W/(m²·4kHz)) to prevent harmful interference with terrestrial users.
- Extension of existing terrestrial SRD frameworks to space, enabling seamless integration.

The European Conference of Postal and Telecommunications Administrations (CEPT) is leading this regulatory innovation. **ECC Decision (25)02**, *"Low power devices communicating with satellites (LPD-S) within the frequency range 862–870 MHz"*, was approved at the 67th ECC meeting in Bled (June 2025) and has officially entered into force. This decision harmonizes and regulates the use of the 862–870 MHz band for satellite IoT across CEPT member countries. Additionally, the Radio Spectrum Policy Group of the European Union (EU), responsible for developing spectrum policies for the EU member states, recognizes this usage as "IoT-NTN in SRD bands" in its Opinion on D2D services.

We believe that this approach could be applied to the 902–928 MHz band, or parts of it, in the Caribbean, taking into account the harmonization of the SRD ecosystem, particularly in terms of receiver design and characteristics, regardless of differing transmission frequencies. Allowing satellite use of this band would enhance spectrum efficiency by introducing new dimensions to frequencies currently used exclusively by terrestrial applications and would foster market competition by enabling new entrants.

2.2. Fees

As we highlighted that NTN operations cover both NR-NTN and IoT-NTN operations in MS, MSS, and license-exempt bands, applying the same fee structure across all operations may not represent an equitable approach, given the varying technical architecture and operational scales involved. NR-NTN and IoT-NTN have varied deployment scales, bandwidth

requirements, transmission frequencies, and revenue models. For instance, IoT terminals typically communicate with satellites limited number of times a day, using minimal bandwidth and generating lower revenue per terminal compared to NR-NTN services whereas broadband devices, on the other hand, require real-time communication with much higher bandwidth and generate significantly more revenue per device.

Due to the above reasons, we see a necessity of differentiation in the proposed fee structure between NR-NTN and IoT-NTN. We believe that IoT-NTN services should be excluded from fees as IoT terminals typically communicate with satellites limited number of times a day, using minimal bandwidth on a shared-basis and generating lower revenue per terminal compared to NR-NTN that generally requires exclusive spectrum, real-time communication with much higher bandwidth and generate significantly more revenue per device.

Excluding IoT-NTN services from the fee structure would reflect the lower bandwidth and revenue generated by these devices and create more competitive environment for IoT market. Additionally, this approach will facilitate the deployment and wide adoption of IoT technologies across Caribbean region and contribute to ECTEL Member States' economy with the benefits of IoT technology, i.e. increase in the efficiency of works. Such an approach would attract both established companies and new entrants to invest in IoT solutions, fostering an innovative and competitive ecosystem that benefits both urban and remote areas.

Recommendations

We strongly support mechanisms that promote consistency, transparency, and innovation across ECTEL Member States, and summarize our key observations and recommendations in the following:

- **Recommendation 1 – Introduction of Non-Terrestrial Networks and Services (NNS) Class Licence**

Plan-S concurs with ECTEL's proposal to establish a class licence for NTN operators that intend only to offer telecommunications services directly to customers using non-terrestrial communications platforms and that do not require the installation of ground-based infrastructure/facilities in the ECTEL Member States. While promoting the NNS license, the process should facilitate market entry and not impose unnecessary barriers such as establishing a local entity, local gateway or any further registration requirements.

- **Recommendation 2 – Consideration of IoT-NTN services**

Plan-S would like to draw your attention to the fact that NTN services encompass both IoT-NTN and NR-NTN services. We therefore kindly request that IoT-NTN services be taken into consideration when finalizing this regulatory framework. Furthermore, as highlighted above, IoT-NTN services operate in the MSS and SRD bands. In this regard, we respectfully recommend the inclusion of the **2 GHz MSS band** and the **902–928 MHz band**, or portions thereof, for satellite IoT services.

- **Recommendation 3 – Amendment of Fee Schedules (Schedules 2 & 3):**

Plan-S supports a proportionate and regionally harmonized cost-based administrative fee structure rather than an approach based on 3.0% of Gross Annual Revenue as set out in the section of **Recommendation 5.2.2.** However, we would like to emphasize that the applying the same fee structure across all NTN services may not represent an equitable approach, given the varying technical architecture and operational scales involved. Therefore, excluding IoT-NTN services from the fee structure would reflect the lower bandwidth and revenue generated by these devices and create more competitive IoT market.

Conclusion

As a satellite IoT operator providing IoT-NTN in MSS and license-exempt bands, Plan-S appreciates ECTEL's leadership in advancing a harmonized regulatory framework for Non-

Terrestrial Networks and Services across its Member States. We believe that fostering innovation through a clear and balanced licensing regime will accelerate digital transformation and ensure inclusive connectivity throughout the Caribbean region.

In summary, Plan-S supports a class licensing regime for NTN operations and requests a license fee exemption for IoT-NTN services or differentiation from NR-NTN services, considering the distinct characteristics of NR-NTN and IoT-NTN services. Furthermore, we emphasize the importance of ensuring spectrum availability for IoT-NTN services in both MSS and license-exempt bands to enhance spectrum efficiency, promote competition, and deliver the benefits of satellite IoT connectivity, offering seamless, scalable, resilient, and interoperable solutions. Plan-S remains committed to collaborating with ECTEL and its Member States to support the development of resilient, affordable, and sustainable connectivity solutions that enhance the region's digital resilience and competitiveness.