16 January 2025

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

To : Director of Electronic Communications
info@urcabahamas.bs

Subject: Plan-S response to the URCA's consultation document on the regulatory framework for satellite-based electronic communications services in The Bahamas

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 URCA's consultation document on the regulatory framework for satellite-based electronic communications services in The Bahamas. We commend URCA's proactive and forward-thinking approach to engaging stakeholders in shaping a framework that ensures efficient utilization of spectrum resources and supports the growth of innovative satellite communication technologies.

Please find enclosed *Attachment*, which outlines our responses for your consideration and is structured as follows:

- **Section 1:** An introduction to Plan-S and the CONNECTA IoT Network.
- **Section 2:** Responses to the consultation document.
- **Section 3:** Conclusion.

We remain at your disposal for any further discussions or clarifications and are eager to collaborate with URCA on matters to which we can contribute.

Respectfully submitted,

Fazlı Kaybal
Spectrum and Regulatory Affairs Manager
fazli.kaybal@plan.space
Üniversiteler Mah. 1596.Cad No:8/1 Cankaya, Ankara, Türkiye

Attachment: URCA's consultation document on the regulatory framework for satellite-based electronic communications services in The Bahamas

SECTION 1

Introduction

In a world where 85% of the Earth's surface remains without terrestrial networks due to geographic and economic constraints, the utilization of satellite technology to bridge this digital gap is critically important for countries where terrestrial networks are not economically feasible to cover large areas. Therefore, we believe that satellite connectivity is an essential instrument for seamless coverage of IoT devices, regardless of their location, thereby assisting in reducing the digital gaps between different parts of a country or the globe.

As a satellite operator, Plan-S is committed to addressing global coverage challenges and fostering a sustainable future for the IoT ecosystem, with the goal of improving life on our planet through sustainable space technologies. Plan-S offers satellite IoT solutions through its satellite networks, which are based on the LoRaWAN and 3GPP standards.

Plan-S's satellite networks, which are a cutting-edge solution optimized for massive narrowband IoT connectivity, offer unparalleled cost efficiency, high reliability, high capacity, low latency, comprehensive global coverage, and industry-leading technology solutions. The LEO architecture allows users of this service to operate at a low cost anywhere on the globe where the service is authorized.

About Plan-S and Solutions

Plan-S, established in 2021, is a major private initiative in Türkiye's satellite and space technology sector, aiming to become a leading global company in the "new space" field by assembling top talents and conducting R&D in satellite and subsystem development, as well as ground and user segment hardware and software in IoT, Earth Observation, and Space-as-a-Solution (SpaaS) business fields.

Plan-S aims to provide IoT connectivity and Earth Observation services across sectors such as agriculture, oil & gas, maritime, transportation, energy, and finance. The company is also focused on the design and manufacture of satellite systems, including satellites, ground stations, ground devices, and the network software needed for seamless operation.

Plan-S launched its first satellite in less than 8 months, starting from scratch while simultaneously assembling its team, establishing technical infrastructure, and developing engineering processes. Additionally, Plan-S has been operating five test satellites in orbit, all launched before the company's second anniversary.

Plan-S provides comprehensive end-to-end solutions for its customers, focusing on the secure transmission of data collected from customer-owned sensors via its satellite network. This solution enables customers to access the transmitted data and its associated details, such as the originating sensor, data size, and time of reception, through a user-friendly web portal.

Plan-S offers satellite IoT solutions through its CONNECTA IoT Networks, utilizing LoRaWAN and 3GPP standards. Currently, Plan-S operates a constellation of eight satellites based on LoRaWAN standard in orbit, delivering IoT services globally. With a confirmed launch plan, this constellation is set to expand to sixteen satellites by the end of the year.

With its networks Plan-S can support diverse use cases across multiple sectors, including tourism, maritime, energy, transportation, and more. Applications include monitoring, tracking, and alerting systems, such as environmental monitoring, asset tracking, smart meters, and fire alarms.

For more details about Plan-S, please visit https://www.plan.space/

SECTION 2

Here we have provided answers to the questions relevant to Plan-S, in the consultation document:

Question 1: Do you have any other comments on the demand and the importance of satellite communication services for The Bahamas? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

We recognize the growing importance of satellite communication technologies for The Bahamas as it is a geographically dispersed nation with numerous islands. Satellite IoT offers critical connectivity solutions in areas where terrestrial networks are either economically or physically infeasible. Additionally, these solutions are essential for disaster preparedness and recovery, providing reliable connectivity when terrestrial networks are down or unavailable.

We believe that satellite communications hold significant potential to transform key sectors of the Bahamian economy. For instance, enhanced connectivity in remote areas can drive growth in tourism, maritime activities, environmental monitoring, and disaster management. Satellite IoT solutions can contribute to the situational awareness of disaster relief agencies by gathering data from disaster areas. By delivering reliable and global connectivity, satellite communication enhances efficiency, safety, and economic resilience across sectors.

The role of satellite technologies in disaster resilience cannot be overstated. The Bahamas is highly susceptible to hurricanes and other natural disasters, which often disrupt terrestrial communication networks. Satellite IoT solutions provide a critical alternative by maintaining connectivity during such events, ensuring effective disaster response and uninterrupted access to essential services. This capability enhances public safety while supporting faster recovery and continuity of operations post-disaster.

As Plan-S, we are committed to leveraging our advanced satellite communication technologies to address these challenges and opportunities. CONNECTA IoT Networks based on LoRaWAN and 3GPP standards are designed to deliver scalable, efficient, and resilient satellite IoT services. These networks offer connectivity options, such as direct-to-satellite employing the 902-928 MHz band and terminal-to-satellite links employing the 1980-2010 MHz / 2170-2200 MHz bands (2 GHz MSS), customized to meet the specific needs of The Bahamas.

As we consider entering the Bahamian market, we highlight the critical importance of a regulatory framework that promotes the facilitation of market entry rather than imposing restrictive barriers. A balanced approach, ensuring compliance while promoting innovation, may enhance market competitiveness, encourage investment, and improve service accessibility for consumers across The Bahamas. If overly strict entry barriers are minimized, a dynamic ecosystem can be fostered in The Bahamas where satellite communication providers contribute to economic growth and technological advancement.

Furthermore, we are keen to establish a presence in the Bahamian market to deliver advanced IoT connectivity solutions. Our technologies aim to enhance connectivity across the family islands, support disaster resilience, and drive growth in critical sectors such as tourism.

We respectfully request consideration of spectrum allocation for IoT/M2M communications in the 2 GHz MSS band and 902-928 MHz band.

This initiative has the potential to mark a crucial advancement in The Bahamas' connectivity landscape. By embracing satellite-based technologies and fostering market entry, stakeholders can unlock new opportunities for innovation and service delivery. We look forward to collaborating with Bahamian stakeholders to bring cutting-edge satellite communication solutions to The Bahamas, enhancing connectivity, resilience, and economic prosperity across the region.

Question 2: Do you agree with the regulatory and policy objectives to consider in this review and the resulting five key objectives guiding URCA's review?

We commend URCA for its regulatory and policy objectives outlined in the consultation paper, which provide a framework to facilitate the development and growth of satellite-based communication services in The Bahamas, fostering a competitive and innovative market environment. The establishment of a modern, transparent, and flexible licensing and spectrum management approach can enhance market competitiveness, attract investment, and improve service accessibility across The Bahamas.

We believe that these objectives facilitate market entry, thereby fostering competition, driving innovation, and improving service quality. Fair competition through an inclusive licensing process can allow multiple operators to share resources efficiently, optimizing spectrum utilization and reducing operational costs. This competition does not only benefit consumers through affordable services but also encourages innovation as operators seek differentiation in a dynamic market.

Moreover, we believe that a licensing framework accommodating emerging technologies and diverse use cases, such as satellite IoT services based on LoRaWAN technology and the 3GPP standard, will ensure the ecosystem aligns with global advancements, benefiting industries dependent on robust communication networks.

Question 3: Do you agree with URCA's preliminary assessment of the current license regime meeting Objective 1. If not, please clearly specify any potential gaps or issues that should be addressed to achieve this objective. In doing so, please provide a detailed explanation of these observations, including supporting evidence where available.

We agree with URCA's preliminary assessment that the current licensing regime effectively supports Objective 1 by enabling the provision of satellite-based communication services across all regions of The Bahamas, including the Family Islands. While the current framework is commendable, we believe there may be opportunities to enhance its effectiveness, particularly in supporting emerging technologies and fostering a competitive market.

We strongly support initiatives to make satellite spectrum bands such as the 2 GHz MSS band available for IoT/M2M services and to open license-exempt spectrum, like the 902-928 MHz band, for satellite IoT/M2M. These steps can promote broader and more flexible IoT/M2M connectivity, fostering innovation and addressing connectivity gaps in remote and underserved areas. For example, the 2 GHz MSS band offers significant potential for satellite IoT applications due to its allocation to MSS in all ITU regions and its inclusion in 3GPP standards

for IoT-NTN. Supporting IoT-NTN features for NGSO operations and prioritizing this band would attract new players to the satellite industry, enhancing competition and innovation in the market. Additionally, IoT-NTN employing NB-IoT technology based on 3GPP standards can provide seamless coverage and interoperability, complementing mobile networks.

Furthermore, CEPT/ECC has published a report (ECC Report 357), "Regulatory analyses of satellite use in the band 862-870 MHz to communicate with terrestrial SRD", to enable satellite downlink in the frequency band 862-870 MHz, a license-exempt spectrum in Europe. ECC Report 357 explores further the European regulatory framework for Short Range Device (SRD) communications, focusing on developments that new satellite technology enables in the 862-870 MHz band for both transmission directions, i.e. from SRD-to-satellites and satellites-to-SRD. This report concludes that satellites transmitting to SRD in the 862-870 MHz band do not cause unacceptable interference to existing SRD applications when a power flux density (PFD) limit of -142 dBW/ (m² 4 kHz) is maintained at the Earth's surface, and that no changes are needed to the current regulatory framework for SRD-to-satellite transmissions (Earth-to-space). Utilizing the 862-870 MHz frequency band for SRD-to-satellite and satellite-to-SRD communications may enable efficient use of spectrum without causing harmful interference to existing SRD devices, as demonstrated in ECC Report 357. We believe that this model can be applied to the frequency band of 902-928 MHz in The Bahamas.

Currently, it is unclear from our perspective whether IoT satellites fall under a class license or an individual license. We believe that the local entity requirements associated with an individual license could negatively impact the adoption of satellite IoT services. Given the market potential in The Bahamas, such requirements may deter satellite operators from applying for licenses due to the high costs involved.

To strengthen the licensing framework, we believe that prioritizing IoT spectrum needs in the 2 GHz MSS band, promoting shared use, i.e. the shared use of the 902-928 MHz band among terrestrial and satellite operators, and removing the local entity requirement from satellite IoT operators if applicable, will promote the provision of services across all regions of The Bahamas. These steps can enhance service accessibility in underserved regions, foster technological advancements, and maintain alignment with universal connectivity goals.

Question 4: Do you agree with URCA's preliminary assessment of the current license regime meeting Objective 2? If not, please clearly specify any potential gaps or issues that should be addressed to achieve this objective. In doing so, please provide a detailed explanation of these observations, including supporting evidence where available.

We appreciate URCA's efforts to align the licensing framework to consider the wide range of use cases and the competition in the cellular mobile market. We believe that satellite IoT services based on 3GPP standards can provide seamless coverage and interoperability, complementing mobile networks while requiring minimal bandwidth to support extensive IoT services. Moreover, satellite networks play a crucial role in maintaining essential services for public agencies when terrestrial networks are disrupted by natural disasters, energy shortages, or similar events. For these use cases, satellite IoT operators and mobile network operators based on 3GPP standards can cooperate with each other to deliver high-quality of services to the citizens of The Bahamas.

Additionally, like satellite IoT solutions based on 3GPP standards, satellite IoT solutions employing LoRaWAN technology in the 902-928 MHz band can complement terrestrial LoRaWAN networks for seamless coverage and interoperability between networks.

Question 5: Do you agree with URCA's preliminary assessment of the current license regime meeting Objective 3? If not, please clearly specify any potential gaps or issues that should be addressed to achieve this objective. In doing so, please provide a detailed explanation of these observations, including supporting evidence where available.

We recognize the importance of disaster-resilient network solutions for The Bahamas, given its vulnerability to extreme weather events. IoT terminals with satellite connectivity can significantly enhance disaster response capabilities by ensuring reliable communication in post-disaster scenarios. For example, Plan-S's IoT terminals can monitor the structural integrity of buildings, bridges, and tunnels, aiding recovery efforts while operating independently on battery power for over 10 years. Drawing from our experience with municipalities and public institutions in Türkiye, we emphasize the value of solutions that enhance situational awareness for disaster relief agencies. By collecting data from critical infrastructure such as bridges and tunnels, satellite technologies can provide robust and resilient support for disaster response efforts.

Question 6: Do you agree with UCRA's proposed way forward on licensing regime to accommodate satellite-based services in The Bahamas? If not, please provide a detailed explanation of your suggestions, including supporting evidence where available.

We agree with your proposal to include provisions for alert messaging and prioritizing communications from designated terminals over other traffic. However, we would like to emphasize that these requirements should be binding for satellite operators only if their services can support such provisions. For instance, while IoT applications can be valuable for post-recovery efforts by enhancing situational awareness and serving as backups for terrestrial networks, prioritization and alert messaging may not be relevant for satellite IoT services.

Question 7: Do you agree with URCA's preliminary views on the expected spectrum demand in low frequency and high-frequency bands from satellite-based communication services in The Bahamas? Do you have any other comments on the precise bands that should be opened in priority to satellite-based communication services in The Bahamas? Please provide a detailed explanation of your views, including supporting evidence where available.

We hereby emphasize the importance of specific frequency bands that could enhance satellite IoT/M2M communication services in the region and highlight our demand for the 2 GHz MSS band, which is globally allocated to MSS under ITU regulations and identified by 3GPP for NTN use. Satellite IoT services require access to the 2 GHz MSS band to implement IoT applications effectively. Therefore, we believe that portions of the 2 GHz MSS band should be allocated for satellite IoT services. For example, the Radio Spectrum Policy Group (RSPG) of the European Union has considered allocating 2x5 MHz on a shared basis to address IoT/M2M demands, recognizing that time-sharing is feasible for such applications and promotes innovation and competition in the market, as noted in its opinion on the reallocation of the 2

GHz MSS band. Similarly, ACMA in Australia has allocated the frequency bands 2005–2009 MHz and 2195–2200 MHz on a shared basis for narrowband MSS use (referring to IoT).

In light of the above, we respectfully request your consideration of allocating spectrum in the 2 GHz MSS band for satellite IoT services either on an exclusive basis (dedicating specific portions of the spectrum for each operator, such as the allocation of 2x5 MHz for IoT services and assigning a bandwidth in this spectrum to each operator in a non-overlapping manner) or on a shared basis. Additionally, an approach that allows for the use of the 2 GHz MSS spectrum by multiple entities or services rather than a single operator or service will foster new opportunities and use cases for the citizens of The Bahamas. This approach will also ensure that this scarce resource is used efficiently to generate social and economic value.

In addition to the 2 GHz MSS band, incorporating the 902-928 MHz frequency bands into the spectrum available for IoT and M2M applications can be considered. ECC has published a report (ECC Report 357), "Regulatory analyses of satellite use in the band 862-870 MHz to communicate with terrestrial SRD", to enable satellite downlink in the frequency band 862-870 MHz. ECC Report 357 explores further the European regulatory framework for Short Range Device (SRD) communications, focusing on developments enabled by new satellite technology enables in the 862-870 MHz band for both transmission directions, i.e. from SRD-to-satellites and satellites-to-SRD. This report concludes that satellites transmitting to SRD in the 862-870 MHz band do not cause unacceptable interference to existing SRD applications when a power flux density (PFD) limit of -142 dBW/(m² 4 kHz) is maintained at the Earth's surface, and that no changes are needed to the current regulatory framework for SRD-to-satellite transmissions (Earth-to-space). Utilizing the 862-870 MHz frequency band for SRD-to-satellite and satellite-to-SRD communications may enable efficient use of spectrum without causing harmful interference to existing SRD devices, as demonstrated in ECC Report 357. We believe that this model can be applied to the frequency band of 902-928 MHz in The Bahamas.

Question 8: Do you agree with URCA's preliminary views on interference risks for satellite-based communication services in The Bahamas? Please provide a detailed explanation of your views, including supporting evidence where available.

We agree with your observation that IoT/M2M applications are typically designed to tolerate a certain level of interference, making them less prone to performance issues in shared spectrum environments. Therefore, we propose the shared use of the 902–928 MHz band between terrestrial and satellite networks, as well as allocating spectrum in the 2 GHz MSS band for shared use of satellite IoT services, as outlined above. Additionally, ECC Report 357 studied the impact of satellite-to-SRD communications and concluded that satellites transmitting to SRD in the 862-870 MHz band do not cause unacceptable interference to existing SRD applications when a PFD limit of -142 dBW/ (m² 4 kHz) is maintained at the Earth's surface

Question 9: **Do you agree with URCA's proposed safeguards to prevent any future interference issues? Please provide a detailed explanation of your views, including supporting evidence where available.**

We agree with URCA's proposed safeguards to prevent future interference issues, as they are essential for ensuring reliable and uninterrupted communication services. However, when determining measures for avoiding interference, the capabilities of satellite networks should be considered. Additionally, we recommend that the safeguards should be tailored to specific

technologies/use cases, such as IoT and M2M applications, which often have unique interference tolerance characteristics.

Question 10: Do you have any comments on the principles et revised structure proposed by URCA for satellite-based electronic communications services in The Bahamas? Please provide a detailed explanation of your views, including supporting evidence where available.

We fully agree with your proposals to remove the geographical differentiation of FSS users, use the quantity of spectrum rather than the number of users or type of use as the basis for differentiating spectrum fees between licensees, and introduce temporary spectrum fee relief for applicants testing services prior to commercial launch. We also support maintaining the policy of not charging fees for M2M/IoT services. We believe that these steps facilitate the use of satellite technologies across The Bahamas and contribute to social and economic developments. Setting spectrum fees at reasonable levels encourages diverse participation, fosters innovation within the satellite communication sector, and enhances operators' ability to allocate financial resources toward service expansion and technological advancements. Moreover, lower spectrum fees can lead to reduced customer invoices, increasing customer satisfaction and driving the adoption of satellite technologies for social and economic development.

We also emphasize that eliminating spectrum fees for test permissions can significantly contribute to innovation and economic development in The Bahamas, presenting an opportunity for the country to position itself as an innovation hub.

Additionally, while URCA considers the potential future scarcity of MSS spectrum and defers any decision to adjust spectrum fees until scarcity becomes a significant factor, we reiterate our request for the allocation of MSS bands, specifically the 2 GHz MSS band, for IoT/M2M services. Furthermore, we request that M2M/IoT services should remain exempt from spectrum fees even when utilizing MSS bands. This exemption can be justified because IoT/M2M devices typically generate minimal revenue per unit, operate with very low bandwidth requirements, and often utilize shared spectrum.

By maintaining a fair and balanced fee structure, URCA can create an environment that fosters innovation, ensures sustainable growth, and ultimately benefits both consumers and industries in The Bahamas.

Question 11: Do you have any comments on the proposed requirements for satellite service providers conducting the administration and management of their business from premises outside of The Bahamas? Please provide a detailed explanation of your views, including supporting evidence where available.

Local data storage and local representation requirements for lawful interception should not be commonly applied to all services. Instead, these requirements should be tailored based on the specific features and capabilities of each service. IoT/M2M services are primarily designed for the transfer of sensor data, such as temperature, humidity, meter readings, and similar information, often in response to network commands. These services typically do not involve personal communication or sensitive content, which are the primary focus of lawful interception regulations.

Imposing lawful interception requirements on IoT/M2M services would not only create unnecessary regulatory burdens but also negatively impact the development and deployment of IoT technologies. These additional requirements would discourage satellite IoT operators from entering the market due to increased compliance costs and technical constraints. Furthermore, IoT/M2M devices often operate in low-bandwidth environments and generate minimal data traffic, making interception requirements technically infeasible or disproportionately costly.

Applying such provisions to IoT/M2M services could delay innovation and limit the availability of these services to Bahamian citizens, depriving them of the significant benefits IoT technologies bring, such as improved efficiency, enhanced monitoring capabilities, and support for key sectors like agriculture, healthcare, and infrastructure.

Therefore, we strongly recommend that lawful interception requirements be carefully tailored to the nature and features of each service and not applied to IoT/M2M services, which do not align with the typical use cases necessitating such provisions. This approach will foster innovation, attract investment, and ensure that Bahamian citizens fully benefit from the transformative potential of IoT technologies.

Question 12: Do you have any comments on other topics related to the provision of satellite-based communication services in The Bahamas which should be considered by URCA? Please provide a detailed explanation of your views, including supporting evidence where available.

As a satellite IoT operator, we play a vital role in extending connectivity to remote and underserved regions, enabling essential services such as environmental monitoring, disaster management, and smart infrastructure. These contributions should be equitable and consider the unique value satellite operators provide in addressing the connectivity needs of communities that would otherwise remain unserved by traditional networks. Given these benefits, we believe that satellite operators inherently contribute to universal services through the nature of the services they provide. Rather than contributing to universal service funds, satellite operators could be required to provide services to customer groups identified by URCA, with obligations determined based on the operators' annual revenue.

SECTION 3

Conclusion

As an operator interested in providing IoT services in The Bahamas through our CONNECTA IoT Networks, which are based on LoRaWAN and 3GPP standards, we sincerely appreciate URCA's commitment to fostering a forward-looking and inclusive regulatory framework for satellite-based communication services in The Bahamas. The proposals outlined in the consultation document demonstrate an emphasis on innovation, market accessibility, and efficient spectrum management.

We believe that a well-balanced and forward-looking regulatory framework will unlock new opportunities for innovation, drive economic growth, and support the unique connectivity needs of The Bahamas' geographically dispersed population and industries. As highlighted in our responses, we strongly support initiatives that promote market entry, encourage fair competition, and enhance the adoption of innovative satellite technologies such as IoT and M2M communications. This approach not only drives economic growth but also enhances disaster resilience and service accessibility for citizens and industries across the region.

Plan-S is committed to collaborating with URCA and other stakeholders to bring advanced satellite communication solutions that enhance competitiveness and deliver tangible benefits to the nation. We appreciate the opportunity to contribute our insights to this consultation and remain committed to supporting URCA on the reframing the regulatory framework for satellite-based electronic communications services in The Bahamas.