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GSOA contribution to Public Consultation on the Draft RSPG Opinion on the EU-level policy approach to satellite Direct-to-Device connectivity and related Single Market issues

Introduction

GSOA welcomes the opportunity to contribute to the Radio Spectrum Policy Group's (RSPG) consultation on the EU-level policy approach to satellite Direct-to-Device (D2D) connectivity and related Single Market issues. As the collective voice of the global satellite industry, GSOA represents a diverse group of satellite operators that provide vital connectivity solutions across broadband, broadcasting, IoT, and emerging Non-Terrestrial Network (NTN) services, including Direct-to-Device (D2D) satellite communications.

D2D connectivity presents a transformative opportunity for expanding mobile coverage, bridging connectivity gaps, and strengthening Europe's digital resilience. By leveraging satellite networks, D2D services can provide seamless, ubiquitous coverage to rural, remote, and underserved regions, as well as enhance emergency and disaster-response communications where terrestrial networks may be unavailable.

However, effectively addressing satellite D2D within the EU regulatory landscape requires a carefully balanced approach—one that safeguards spectrum certainty, ensures fair and non-discriminatory market access, and fosters coexistence between satellite and terrestrial networks. This is particularly critical in preserving the integrity of Mobile Satellite Service (MSS) spectrum, which has long been allocated for satellite communications and remains the most immediate, regulatory sound and scalable path for delivering D2D services.

In its 2024 whitepaper on satellite D2D connectivity,¹ GSOA outlined the two primary service models—D2D in MSS bands and D2D in Mobile Service (MS) bands—and highlighted the unique opportunities and challenges associated with each.

D2D in MSS bands leverages existing MSS spectrum allocations, aligning with 3GPP NTN standards to provide a seamless transition between terrestrial and satellite networks for voice, data, and messaging services. This model benefits from existing regulatory certainty, as MSS bands are already authorized for satellite use and do not require new regulatory frameworks for deployment. Implementing D2D in MSS bands requires mobile devices with RF capabilities that support these MSS bands. There are currently off-the-shelf devices that the industry has been working to develop further.

D2D in MS bands seek to utilize spectrum allocated to Mobile Services (IMT) to connect directly to mass-market mobile devices that already support use of these IMT bands. This makes D2D in MS bands able to leverage existing off-the-shelf devices without the need for new devices, but it does require new

¹ GSOA (2024), [The Future of Satellite Connectivity: Various Approaches to Direct-to-Device Services](#)

regulatory frameworks, spectrum-sharing agreements with MNOs, and careful interference management to ensure compatibility with existing networks and services within and in adjacent bands.

It is important to note that D2D communication is not limited to the traditional bands typically discussed for mobile communications. In addition to the established frequency ranges, D2D could be implemented in other bands, especially in bands that are already, or are expected to be, incorporated in mobile devices as well as in some other satellite bands where in future the development of D2D capabilities and services can be implemented by satellite systems / networks.

In this response, GSOA outlines key policy considerations and recommendations to support the development of a competitive, innovation-driven, and a more harmonized regulatory approach for D2D services in Europe. GSOA remains committed to working collaboratively with EU policymakers, Member States, and industry stakeholders to ensure that D2D connectivity can reach its full potential, enabling ubiquitous, resilient, and inclusive digital infrastructure for the continent.

D2D Service Models Implementation in Europe

As the RSPG establishes, the satellite market is currently subject to numerous initiatives, innovations and large investments from both new and legacy satellite operators. D2D itself has a variety of rollout methodologies and services. Regardless of the rollout methodology or the intended services, the successful deployment of D2D requires specific considerations including a flexible regulatory framework, technical analyses, harmonised designation of certain spectrum bands, and open standards as well as transparent and aligned licensing regimes.

D2D-IMT services

GSOA recognizes the potential for D2D services operating in IMT bands to expand connectivity, particularly in areas with limited or no terrestrial coverage. This variant of D2D leverages existing mobile devices and their associated chipsets, enabling satellite networks to seamlessly operate within Mobile/Fixed Communications Networks (“MFCN”) bands already allocated at the ITU level to the MS and identified for IMT. By tapping into these bands, satellite networks can serve as a complementary solution to terrestrial mobile coverage, ensuring continuous connectivity in rural, maritime, aeronautical, and other underserved areas.

The use of terrestrial IMT spectrum for satellite D2D raises critical regulatory, technical, and market considerations that must be carefully addressed. Unlike D2D services operating in MSS bands, which already have a well-defined framework, D2D in IMT bands lacks a formal regulatory basis under the current ITU Radio Regulations and currently operates under RR No. 4.4 as specified in RSPG’s Opinion. This approach to D2D services may be suitable for some countries but could be challenging for other countries that might enable insufficient spectrum to advance this technology beyond its current complementary use for emergency texting, as it carries significant operational risks and regulatory uncertainty.

As noted earlier by GSOA in its D2D paper, the use of IMT bands by satellites is currently considered a non-conforming use due to the lack of an appropriate MSS allocation and of a clear regulatory framework permitting such operations. However, WRC-27 Agenda Item 1.13 (“AI 1.13”), which is examining the potential allocation of new MSS bands, presents an opportunity to evaluate the integration of D2D services within these bands. To enable D2D in IMT bands, domestic and international regulations will likely need to be updated.

Given that IMT bands are utilized by terrestrial networks across Europe, GSOA urges a cautious and well-structured approach to avoid harmful interference, unintended roaming, and disruptions in D2D service provision. Effective interference management measures will be critical for successful deployment. Additionally, some national regulators, including the U.S. Federal Communications Commission (FCC), the Department of Innovation, Science and Economic Development of Canada (ISED), and the Australian Communications and Media Authority (ACMA), among others, have already begun developing regulatory frameworks for satellite use of certain mobile bands subject to agreement with spectrum block assignees.

One key difference between countries with vast territories such as the U.S., Canada and Australia and smaller, denser regions like the EU, is that the latter must place a greater emphasis on cross-border coordination. Regulatory frameworks for D2D should account for these fundamental geographic differences to ensure efficient and equitable service provision. In addition, the EU should closely assess these developments to ensure that its approach is aligned with global best practices while safeguarding the integrity of EU spectrum policies.

Another key technical consideration regarding D2D operation in IMT bands is the potential use of frequency arrangements already defined for terrestrial IMT as the baseline for collaboration between satellite and terrestrial networks. Based on the frequency arrangements currently under consideration at the ITU under AI 1.13, EU should focus on those frequency arrangements where the transmission directions are in line with the existing IMT bands already in use within EU.

Furthermore, D2D in IMT bands requires that satellite operators and MNOs establish partnerships or enter into agreements for access to shared spectrum beyond the MNO's terrestrial coverage area. This cooperation is essential to ensure efficient spectrum utilization, minimize interference risks, and support a sustainable co-existence model. Any regulatory framework for D2D in IMT bands should therefore be technology-neutral, fair, and non-discriminatory, ensuring that satellite-based D2D solutions provide the required protection against interferences to operations in-band and in adjacent bands.

While D2D in IMT bands presents an opportunity to expand connectivity, it remains in the early stages of regulatory development. The EU should carefully consider the developments of the preparatory work of WRC-27 and engage with both satellite and mobile industry stakeholders to develop a framework that fosters innovation while maintaining spectrum integrity. The European Commission's consideration of an amendment to the current EU Code on Electronic Communications is a significant step in this process. However, given the ongoing technical and regulatory studies under WRC-27 (AI 1.13), it will be important to consider its outcome to further complement the EU regulatory framework. Aligning with international framework to enable D2D will help prevent fragmentation, ensure long-term regulatory stability, and promote a globally competitive satellite D2D market.

D2D-MES services

GSOA recognizes the value of continuing the use and development of D2D services operating with Mobile Earth Stations (MES) operating within the well-established MSS framework. These services have been successfully deployed for decades, providing reliable global connectivity, including in remote and maritime regions, disaster response, and critical communication sectors. GSOA welcomes the RSPG's recognition that D2D-MES services benefit from an existing regulatory and technical ecosystem that facilitates seamless satellite communications.

GSOA strongly supports the RSPG's observation that there is a well-functioning framework in place for D2D-MES, which is supported by the CEPT harmonisation largely implemented in Member States, improvements in licensing transparency across EU Member States would further enhance service deployment GSOA supports efforts to streamline national authorization processes and avoid unnecessary regulatory burdens on satellite operators. Maintaining a stable regulatory environment for D2D-MES services is crucial to ensuring their continued role in delivering connectivity to users across Europe and beyond.

It is to be reminded that, within the ITU technology development framework, the satellite component of IMT was conceptualized under IMT-2020 and is being defined for IMT-2030, with the aim of achieving true NTN-TN integration to provide ubiquitous and seamless connectivity. Since its initial recognition in WARC-92, and through subsequent Resolutions 212 (WRC-07), 225 (WRC-12), and 248 (WRC-19), the ITU has progressively refined its vision for integrating satellite and terrestrial networks under a unified IMT ecosystem. The most recent Report ITU-R M.2514 on satellite radio interface of IMT-2020 underscores the key role of the satellite component in extending IMT services to unserved and underserved areas, supporting Enhanced Mobile Broadband (eMBB-s), Machine-Type Communications (mMTC-s), and High Reliability Communications (HRC-s). The Report ITU-R M.2543 published in November 2024 acknowledges that the NTN specifications described in 3GPP Release 17 uniquely qualify as IMT-2020 satellite radio interface. The frequency bands covered in the 3GPP NTN specifications are currently allocated to the MSS, and mass market smartphones and devices supporting these MSS bands and specifications are increasingly available. Associated service offerings will thus benefit from the well-established regulatory regime in MSS bands.

Recent advancements in MSS have led to a breakthrough, with 3GPP establishing a global standard for satellite networks in the MSS band supporting D2D communications for smartphones, handheld, IoT, and vehicle-mounted devices. Defined in March 2023 as part of 3GPP Release 17, the standard introduces two key protocols—NTN-NR (satellite 5G) and NTN-IoT (satellite IoT). Key enhancements focus on addressing satellite-specific challenges, such as latency and Doppler effects, enabling more precise synchronization with user terminals hence improving service quality for applications like video, voice, and rich-text communications. By leveraging shared technologies and common devices, the 3GPP NTN standard enables seamless interoperability between satellite and terrestrial/cellular. Moreover, 3GPP Release 18 builds on these foundations with further improvements designed to optimize satellite access performance and facilitate the launch of innovative services, ultimately elevating the user experience. These ongoing updates position operators in the MSS bands to offer service quality that complements terrestrial 5G networks, expanding the potential of satellite networks to meet global connectivity demands. Satellite industry stakeholders are currently focused on further advancements in both NR-NTN and IoT-NTN technologies as part of 3GPP Release 19. These developments aim to expand network capabilities and introduce new features that will benefit end users. The ongoing evolution of the NTN standard under 3GPP promises to increase the role of satellite networks operating on the in the MSS spectrum in providing more comprehensive and reliable service options across a broad range of applications.

Plans are already underway to develop ETSI Harmonized Standards for NTN-NR and NTN-IoT capable UE to ensure that the use of these devices are going to be harmonised for commercial use within the EU countries. These initiatives are being coordinated within ETSI TC-SES and TC-SES-SCN. The availability of NTN-NR and NTN-IoT standards combined with the definition of S-band and L-band as 3GPP n256, n255,

n254, and n253 has provided operators the ability to plan and bring the latest 5G and IoT services to the EU-market through satellite deployment.

GSOA would also like to mention that in addition to the MSS operators listed in section 2.3, other GSOA members are planning and currently able to provide D2D services in the European Union.

D2D-IoT-SRD services

GSOA recognizes the growing interest in utilizing Short-Range Device (SRD) bands for satellite-based IoT services. While the bands mentioned in section 2.4 of the RSPG's draft Opinion have traditionally supported unlicensed or lightly licensed terrestrial IoT applications, the integration of satellite connectivity presents opportunities to extend IoT reach into areas lacking terrestrial infrastructure. This enables new use cases through interoperability between terrestrial and satellite networks, enhances spectrum efficiency by adding a new dimension to current usages, and more. In this regard, the harmonized technical conditions for satellite use in SRD bands across EU Member States must be addressed to support market growth.

In this context, GSOA appreciates the efforts within CEPT to harmonize the 862-870 MHz band for satellite-to-SRD communication and supports its inclusion in the ECC framework with clear technical conditions to ensure compatibility with existing terrestrial applications and services. GSOA believes that adding a request under the permanent SRD mandate to recommend possible technical conditions for satellite-to-SRD communications in the relevant harmonized SRD bands will facilitate the harmonization of this approach across the EU, provide a clear and robust signal to satellite operators interested in this model, and ensure the efficient use of spectrum for both terrestrial and satellite operators.

GSOA also believes that maintaining, on a non-discriminatory and transparent basis, a list of satellite operators providing SRD satellite services in EU harmonised SRD bands will facilitate Member States to identify satellite operators applying required harmonised technical and operational conditions for the prevention of any harmful interference to any services and applications.

GSOA recommends that any regulatory framework for D2D-IoT in SRD bands ensure non-discriminatory access for satellite operators while preserving the integrity of existing IoT applications. Common EU-level principles to encourage spectrum sharing based on clear conditions and facilitate a stable environment for satellite IoT deployment would provide much-needed regulatory clarity.

D2D-IoT-MSS services

GSOA strongly supports the continued and expanded use of MSS spectrum below 1 GHz for IoT-based D2D applications. MSS bands are uniquely suited to support satellite IoT services due to their global availability, efficient signal propagation, and well-established regulatory framework. These bands enable seamless integration of satellite connectivity, facilitating reliable voice, data, and messaging services across urban, rural, and remote areas, as well as in maritime and aeronautical environments. GSOA agrees with the RSPG's assessment that MSS-based IoT services operate under a stable regulatory regime across most EU Member States, with general authorization serving as the prevailing model.

As IoT applications continue to expand, it is critical to preserve and optimize MSS bands to ensure that satellite-based IoT services can scale effectively. GSOA urges EU policymakers to safeguard MSS

allocations against encroachment from other services and to ensure that any regulatory updates facilitate, rather than hinder, the growth of satellite IoT connectivity. Additionally, GSOA supports creating a level playing field for electronic communication satellite constellations for both protecting European interests and fostering innovation in the satellite IoT market. This includes safeguarding existing frequency bands and enabling satellite IoT in new bands.

While GSOA fully supports the continued development of D2D-IoT services in MSS bands (<1 GHz), it is important to examine this issue in the broader context of D2D-IoT services in MSS bands above 1 GHz. Unlike D2D services in IMT bands, MSS-based IoT services benefit from a dedicated spectrum allocation, which helps mitigate interference risks and ensures compatibility with existing terrestrial and satellite networks. For instance, 3GPP Release 17 NTN specifications have already established technical standards for IoT-NTN in MSS bands, supporting interoperability across mobile chipset vendors and enabling a diverse range of connected devices, including smartphones, wearables, and IoT terminals. Future discussions at WRC-27 (Agenda Items 1.12 and 1.14) will also play a pivotal role in shaping potential additional MSS spectrum for the long-term availability and regulatory certainty of MSS services (including IoT-based D2D applications), and it is essential that EU-level decisions align with international spectrum harmonization efforts to prevent fragmentation and ensure global interoperability. GSOA welcomes RSPG recommendation to consider possible follow-up action based on WRC-27 results on AI 1.12 and AI 1.14 regarding any need for European harmonisation and to recommend any follow action, as appropriate.

Other Considerations

Alignment with 3GPP Standardized Bands

It is essential to prioritize the selection of D2D bands that are already supported by 3GPP standards. Utilizing bands with existing 3GPP standards ensures smoother integration and interoperability, reducing the need for significant infrastructure changes and allowing for a more seamless user experience. This approach also supports the adoption of D2D capabilities across a broad range of devices that are already in the market, leveraging global harmonization of spectrum.

Security issues

GSOA fully supports the long-standing approach that Member States should manage their own lawful interception and national security issues as a key element of sovereignty. This is in line with Directive (EU) 2018/1972² which empowers Member States to attach as a condition to general authorisations, the provision of lawful interception requirements.³

Access to national markets (common requirements)

GSOA supports moves towards the adoption of common requirements on the EU-level for access to national markets in Europe. The common requirements presented by the RSPG are a welcome consideration towards ensuring the continued safe and protected operation of incumbent systems while granting a means through which new entrants can enter a market in a more harmonised and safe manner. Adherence to the ITU RR should always be required and likewise good faith coordination should always be encouraged.

² [Directive \(EU\) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code \(Recast\)](#)

³ Annex 1 of Directive (EU) 2018/1972

Access to EU market (enforcement)

GSOA supports the proposed enforcement measures presented by the RSPG.

Radio equipment

GSOA agrees that compliance with RED is sufficient to safeguard consumers, manufacturers and service providers.

Final Remarks

GSOA thanks the RSPG for this opportunity to engage with the Group's D2D opinion. This work underscores the critical role of D2D services in expanding connectivity, bridging digital divides, and enhancing Europe's digital resilience.

We welcome the opinion as a well-balanced regulatory framework is essential to ensure fair market access, spectrum certainty, and coexistence between satellite and terrestrial networks.

GSOA remains committed to collaborating with EU policymakers, Member States, and industry stakeholders to establish a harmonised, innovation-driven, and globally competitive satellite D2D ecosystem that supports ubiquitous, resilient, and inclusive digital infrastructure across Europe.