Question	Your response
Question 1: Do you agree with our assessment of the business models that could potentially emerge?	Confidential? – N EchoStar agrees that various business models may emerge, including consumer satellite services and satellite backhaul. However, the viability of these models depends largely on the regulatory framework. Business models based on shared use of IMT spectrum face significant challenges, such as fragmented spectrum licences (as in Europe) and potential interference.
Question 1(a): Are there any other business models that you think could deliver benefits for people and businesses in the UK?	Confidential? – N Yes. MSS-based D2D models can deliver services directly to consumers and businesses without the complexity of IMT spectrum sharing. These models are particularly well-suited to public safety, transport, utilities, and rural coverage use cases. They offer scalable, low-latency coverage across borders, with minimal regulatory burden and high resilience in emergencies.
Question 1(b): Are there any business models that could not operate under our proposed approaches?	Confidential? – N The shared use of IMT spectrum may jeopardize the overall business case for enabling D2D in Mobile spectrum bands at all given the risk of interference, particularly for those dependent on consistent and interference-free spectrum access. Ensuring robust interference protection mechanisms is essential, yet it remains unclear whether such mechanisms are feasible and available.

Question	Your response
Question 2: Do you agree with our assessment of the benefits that could be realised through authorisation of D2D services?	Confidential? – N EchoStar agrees that D2D services provide substantial social and economic advantages. D2D services will substantially decrease the number of "not-spots" across the UK especially in rural and remote areas and maritime regions while supporting UK Government wireless infrastructure and resilience objectives. However, as compared to D2D services offered over dedicated MSS bands, sharing with Mobile spectrum bands presents serious challenges. Any D2D service that relies on sharing Mobile spectrum bands should, at least, meet the following conditions: • The authorization system must provide clear technical and regulatory guidelines, especially regarding spectrum coordination and interference protection. • The UK framework should maintain alignment with CEPT and ITU standards to prevent market fragmentation while ensuring uninterrupted cross-border service operations.
Question 2(a): Are there any other benefits for UK citizens and businesses that could be realised?	Confidential? – N Yes. D2D services provide additional benefits to core coverage and safety features through the following capabilities: • The D2D services function as backup systems to provide mobile banking and e-health and e-learning services to rural areas. • The introduction of D2D services promotes mobile service competition through non-terrestrial actors who provide additional connectivity solutions. • D2D services enhance digital public service accessibility in regions where fibre or terrestrial mobile investment does not generate sufficient profit. • The haulage and maritime and aviation sectors benefit from D2D services to maintain continuous mobile access which has become crucial for both compliance and logistics operations. The strategic implementation of D2D services reduces UK dependence on terrestrial networks thus enhancing national resilience against systemic disruptions such as cyberattacks, power outage, storms and infrastructure sabotage.

Question	Your response
Question 3: Do you have comments on how emerging D2D technology should support 999 service provision?	Confidential? – N EchoStar recognises the importance of ensuring that D2D services, where feasible, contribute to the availability and reliability of emergency communications in the UK. However, we recommend that expectations for 999 integration be: • Tailored to the technical capabilities of the satellite system and the devices in use (e.g. unidirectional messaging vs. full voice/data support). • Differentiated by service type, recognising that some D2D offerings are not positioned as primary mobile services but as complementary layers or resilience overlays. From a technical standpoint, delivering 999 calls over D2D links involves challenges in: • Location determination (especially in LEO networks with dynamic beams and less accurate geolocation). • Call routing to the appropriate Public Safety Answering Point (PSAP). • Lawful intercept and data retention obligations under the Investigatory Powers Act. We propose a phased approach: 1. In the near term, satellite D2D providers offering messaging-based emergency capabilities should coordinate with Ofcom and the Home Office on disclosure, labelling, and emergency coverage transparency. 2. Over time, as D2D networks mature and support higher-throughput, lower-latency communications, additional regulatory guidance on full 999 integration (voice, location, handoff) may become viable.
Question 4: Are there any mobile spectrum bands not in scope of our proposals that you think we should consider?	Confidential? – N No. But as mentioned herein, EchoStar maintains that dedicated MSS bands, harmonized over large geographies, remain the most viable approach to enabling D2D services in the UK and elsewhere.

Question	Your response
Question 5: Does deployment in supplementary downlink spectrum (SDL) present any challenges in comparison to other bands? Is there interest in deploying in this spectrum?	Confidential? – N As mentioned in our response to Q1, any reliance on Mobile spectrum bands creates multiple deployment difficulties for satellite D2D implementation. Regarding SDL in particular, the commercial and technical limitations together with the absence of uplink functionality make SDL less useful for D2D applications unless it is used with terrestrial infrastructure. MSS bands, on the other hand, provide immediate two-way functionality, and they match 3GPP NTN standards.
Question 6: Do you agree with our proposal to limit this authorisation to the UK mainland and territorial waters? If not, please explain why.	Confidential? – N Yes, EchoStar agrees that the initial scope of D2D authorisations should be limited to the UK mainland and territorial waters, consistent with Ofcom's jurisdiction. However, satellite systems are inherently cross-border and global in nature. The national authorization framework needs to maintain compatibility with CEPT and ITU rules to prevent market fragmentation or unintended interference beyond UK borders. Specifically, LEO constellations operate across multiple countries at once and their regulatory compliance needs regional coordination. Roaming D2D terminals such as maritime vessel smartphones and commercial vehicle terminals experience regular movements between UK territorial boundaries. Different national regulations regarding spectrum access and lawful intercept and emergency obligations create challenges for maintaining service continuity or device provisioning. To ensure commercial viability and consumer trust, Ofcom should coordinate with European administrations (e.g. via CEPT FM44 or ECC Decisions) to develop a harmonised regional authorisation model, even if implemented nationally at first.
Question 7: Do you agree that our proposed technical conditions for D2D satellite emis-	Confidential? – N EchoStar supports the inclusion of technical conditions to protect adjacent mobile services but believes that a more granular, risk-based framework is needed, especially in the context of IMT-band D2D.

Question	Your response
sions will protect mobile services delivered by other operators in adjacent areas and in adjacent spectrum?	In particular: • Emission masks and power limits must be tailored to the specific band, geographic context, and satellite system architecture (e.g., LEO vs GEO). • Adjacent-area protection is particularly relevant for terrestrial border zones, where uncontrolled emissions from satellite terminals could interfere with licensed terrestrial operations in neighbouring countries. • Adjacent-band protection is essential in environments with tightly packed spectrum (e.g., S-band), where legacy systems, public safety services, or broadcasting operate within or near the same range.
Question 8: Do you agree with our high-level co-existence assessment for other services in adjacent spectrum to D2D?	Confidential? – N EchoStar generally agrees with Ofcom's high-level assessment but recommends expanding it to include: • Service-specific coexistence modelling (e.g. impact on aeronautical telemetry, PMSE, and incumbent MSS/FSS users). • Temporal factors, such as LEO satellite pass frequency, duty cycles, and beam dwell times, which influence aggregate interference potential. • Cumulative effects, where thousands or millions of D2D terminals may be operating simultaneously, even if each is within nominal emission limits. In the MSS context, coexistence is already a core feature of system design: • Operators coordinate on cross-border assignments through ITU processes (Articles 9 and 11). • Use of guard bands, modulation efficiency, and terminal link budgets ensures that emissions do not bleed into adjacent services. For D2D systems in IMT bands, coexistence becomes more complex and context specific. Ofcom should ensure that D2D authorisations include: • Ongoing monitoring obligations; • Requirements for interference resolution protocols; and

Question	Your response
	• In some cases, dynamic power backoff or usage restrictions in sensitive locations (e.g., near airports, national security installations).
Question 9: Are there other services co-channel or in adjacent spectrum that you think we should take into account when assessing coexistence? If so, please provide evidence of the nature of interference and what level of protection you consider is necessary.	Confidential? – N Yes. Adjacent services such as MSS, FSS, aeronautical telemetry, and public safety systems must be considered. PMSE and incumbent CGCs are also sensitive to out of band emissions and cross-interference.
Question 10: Do you agree with our preferred authorisation approach (option 2)? If not, please set out your reasoning.	Confidential? – N Option 2 is a pragmatic authorisation model, especially in the context of managing D2D-IMT services in the UK. Ofcom places responsibility for spectrum access and compliance on the MNO and ensures that any deployment of D2D in mobile bands occurs through a transparent, accountable, and coordinated process and not through unilateral or unregulated access by satellite operators. That said, this model does not avoid the legal and technical pitfalls of uncoordinated D2D-IMT. Unregulated use of IMT bands through Article 4.4 of the ITU Radio Regulations offers no protection against interference or guarantees of enforceability. In this model, the aforementioned article will continue to apply until WRC-27 defines the frequencies for A.I. 1.13., which could further increase the risk of interference when multiple satellite networks or systems use the same spectrum and orbital resources under Article 4.4 for long-term commercial services.

Question	Your response
Question 11: Are there any alternative authorisation options, not discussed here, that you believe are worth considering?	Confidential? – N Yes. D2D services in existing globally harmonized MSS spectrum allocations would better enable deployment and expedite service availability while minimising interference risks associated with shared IMT spectrum.
Question 12: Do you agree with the proposed conditions?	Confidential? – N Ofcom's proposed conditions are necessary but not sufficient to protect incumbent terrestrial users and adjacent spectrum services from harmful interference. Given the inherent complexity and novelty of IMT-based D2D, including the potential for large-scale deployment of mobile terminals operating in shared spectrum, we recommend the following additions to the proposed conditions: • Conditions should be scalable and risk-based, recognising that NGSO constellations and dynamic beam management introduce different interference patterns than static systems. • Ofcom should retain flexibility to adjust technical conditions as real-world deployments evolve, especially in dense urban environments or cross-border regions. • Enforcement mechanisms should include proactive monitoring, transparency on D2D system parameters (e.g. power levels, duty cycles), and clear accountability in the event of harmful interference.
Question 13: Do you have any other comments on the proposals set out in this document?	Confidential? – N EchoStar appreciates Ofcom's efforts to strike a balance between enabling innovation and safeguarding existing spectrum users. The design of Option 2 demonstrates clear attention to: • Preserving MNO spectrum rights; • Establishing a credible enforcement mechanism through licence variation; and • Encouraging structured partnerships between satellite operators and MNOs.

Question	Your response
	We also wish to emphasise the importance of regional alignment and on-going technical work in Europe. During FM44#79, held from 13 to 15 May 2024 in Copenhagen, the CEPT group reviewed the scope of its ECC Report titled *"Exploring the regulatory and technical elements of satellite-based Direct-to-Cell (D2C) communications via existing available smartphones."* The purpose of this work is to conduct a comprehensive analysis of spectrum management and regulatory frameworks necessary for D2D implementation. The ongoing report reflects the growing interest and complexity of D2D deployments and aims to establish a harmonised European regulatory and technical framework. Given the importance of these studies, EchoStar strongly encourages Ofcom to take them into account before finalising any national authorisation model, particularly one that could diverge from emerging CEPT consensus. A well-informed and coordinated approach will ensure the UK remains interoperable with its neighbours and avoids premature regulatory fragmentation. EchoStar remains fully committed to contributing to both UK and European policy development and welcomes continued engagement with Ofcom on this important topic

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