Consultation response form

Question	Your response
Question 1: Do you agree with our assessment of the business models that could potentially emerge?	
Question 1(a): Are there any other business models that you think could deliver benefits for people and businesses in the UK?	
Question 1(b): Are there any business models that could not operate under our proposed approaches?	
Question 2: Do you agree with our assessment of the benefits that could be realised through authorisation of D2D services?	
Question 2(a): Are there any other benefits for UK citizens and businesses that could be realised?	
Question 3: Do you have comments on how emerging D2D technology should support 999 service provision?	
Question 4: Are there any mobile spectrum bands not in scope of our proposals that you think we should consider?	
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?	

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Question 6: Do you agree with our proposal to limit this authorisation to the UK mainland and territorial waters? If not, please explain why.	
Question 7: Do you agree that our proposed technical conditions for D2D satellite emissions will protect mobile services delivered by other operators in adjacent areas and in adjacent spectrum?	
Question 8: Do you agree with out high-level co-existence assessment for other services in adjacent spectrum to D2D?	Confidential? N The 1452-1492 MHz SDL band (proposed for re-use here) is very close to the internationally protected passive band at 1400-1427 MHz, which is one of the most important bands for radio astronomy, since it covers neutral hydrogen emission and is the widest contiguous purely passive band below 15 GHz. This passive band should be protected to the levels specified by ITU-R RA.769-2. Specific studies will be required to ensure that this is the case and geographic coordination may be needed if this band is re-used.
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.	
Question 10: Do you agree with our preferred authorisation approach (option 2)? If not, please set out your reasoning.	
Question 11: Are there any alternative authorisation options, not discussed here, that you believe are worth considering?	
Question 12: Do you agree with the proposed conditions?	

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Question 13: Do you have any other comments on the proposals set out in this document?	Confidential? N The astronomy community, in the UK represented by the Royal Astronomical Society (RAS), is seriously concerned about the impact of satellite constellations on optical and radio astronomy. Historically we could avoid interference by locating telescopes in remote sites protected by ordinances such as radio quiet zones, and strict controls on local light pollution. Space-based communication systems, including D2D, are by their very nature designed to cover the entire globe, so location alone is no longer sufficient to protect astronomical observatories and allow them to operate to their full potential. There is no terrain-based shielding for radio observatories, or avoidance of satellite transmissions simply through location, and the signal sources are constantly moving with respect to their receivers. While we recognise that the proposed bands are already allocated to terrestrial services, the migration to satellite downlinks poses new challenges. A key international example of a potentially compromised facility is the Square Kilometer Array Observatory (SKAO) under construction in southern Africa and Australia, which will be the largest and most sensitive radio observatory ever built. SKAO has significant public investment by the UK government, amounting to £277 million from the Science and Technology Facilities Council or around 15% of the total budget. Although this is located outside of the UK, its operation is clearly affected by regulations put in place here. Closer to home and on UK soil, the iconic Lovell telescope at Jodrell Bank in Cheshire, and the e-MERLIN network of telescopes are similarly at risk.

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	The construction of LEO satellites providing D2D services with very large antennas (such as AST Bluebirds) is a further concern to optical astronomy, as their higher surface area will mean they reflect more sunlight and so they will be much brighter than smaller existing systems. OfCom needs to put a regulatory framework in place that protects radio astronomy in particular in designated sites where observatories either operate already or are under construction, and to be mindful of the impact of constellations on optical astronomy. The RAS and the International Astronomical Union Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference (IAU CPS) would be happy to offer advice and guidance on this, and to work with OfCom on the development of regulations and guidelines that work for users as a whole.

Please complete this form in full and return to mobilefromskyandspace@ofcom.org.uk.