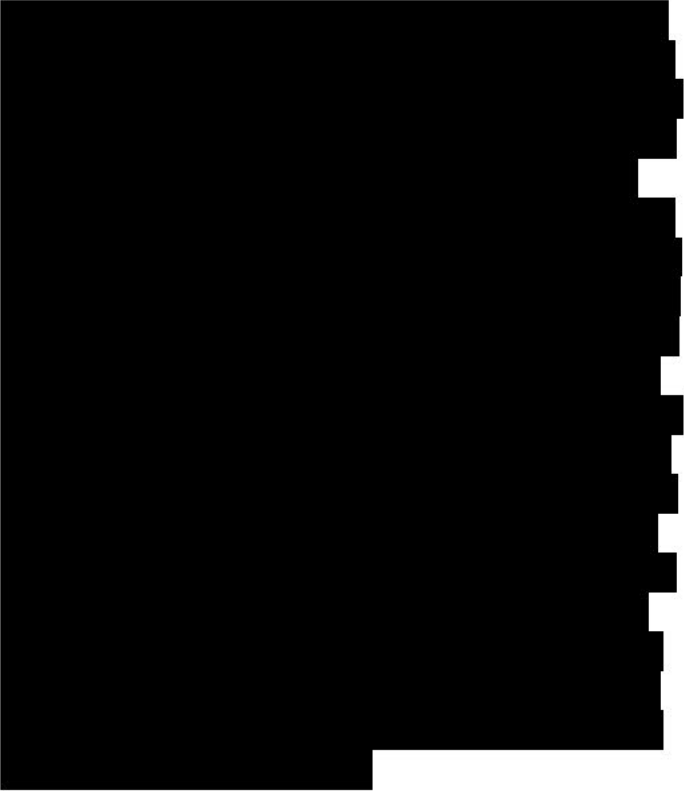


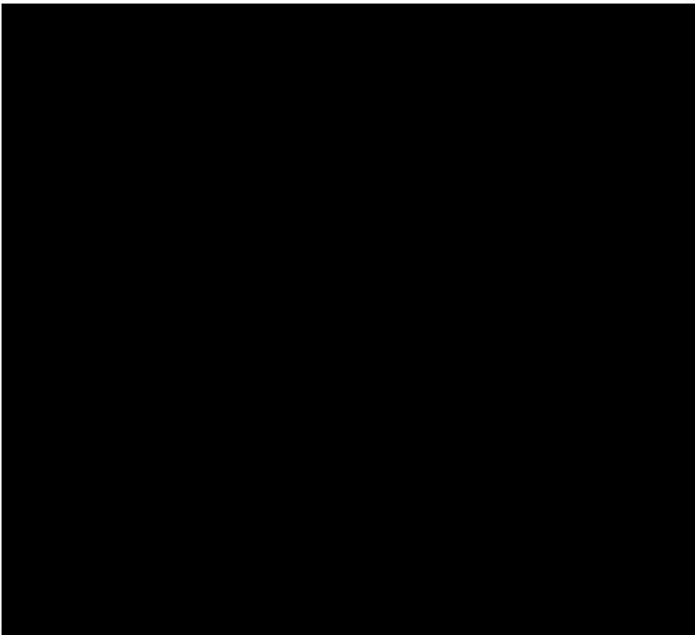

Your response

Question	Your response
<p>Question 1: Do you agree with our analysis of the case for regulatory intervention and our proposal to license satellite gateways to access 28 GHz spectrum in portions of the band not currently available for satellite gateways? If not, please provide reasons/evidence for your response.</p>	<p>Confidential? – Partially</p> <p>SpaceX agrees with Ofcom’s analysis in its case for regulatory intervention to promote efficient use of the 28 GHz band in the United Kingdom. In particular, SpaceX would like to highlight the significant benefit to consumers that will result from facilitating satellite gateway access to the 28 GHz band, including supporting residential, business and enterprise access to high-speed broadband access anywhere in the country. Further, Ofcom’s suggested proposal directly aligns with Ofcom’s mandate and better aligns with CEPT allocations and the spectrum frameworks of most other administrations globally.</p> <p>With growing demand for satellite-based high-speed and low-latency broadband connectivity, especially in places with little or no terrestrial service provision, there is also a growing need for spectrum to connect satellites back to the terrestrial internet via satellite gateways. These gateways are fixed earth stations that point at the satellite overhead, so they can be coordinated to coexist with many other terrestrial operations that generally point across the land.</p> <p>Ofcom is correct that while it is possible to coordinate satellite gateway operations with current Spectrum Access licence service offerings, doing so has proved to be time consuming and expensive, including negotiations with various licencees. In order to gain access to “standard” gateway spectrum in the Ka-band, a satellite operator must obtain authorizations from Ofcom alongside several other Spectrum Access licensees for each gateway earth station site. This has proven challenging even in cases where the incumbent is not currently using spectrum. The costs and delays have a direct impact on service to UK citizens and create distorted incentive structures as incumbents are not often incentivized to facilitate access to these critical satellite bands without steep costs. Such costs are prohibitive to the rapid deployment of essential and innovative broadband services and ultimately harm UK consumers as they are often passed on to the customer. Ofcom has the opportunity, with this intervention, to promote the efficient use of</p>

Question	Your response
	<p>this underutilized band in the UK and allow new technologies to enter the market, without negatively impacting existing services in the band. In fact, other administrations around the world are rapidly moving away from exclusive licensing in the 28GHz band as they note the increased use of this band for satellite technologies and the ability for systems to share this spectrum through various co-existence models.</p> <p>SpaceX would like to draw attention to changing trends in the location of gateway earth stations. While SpaceX agrees with most of the Ofcom analysis, in the past satellite gateways were primarily deployed rural areas. This may have been a viable approach for legacy satellite services that could not compete with terrestrial services on performance. However, today there is an increasing interest in locating gateways either at, or near, data centers in urban areas to minimize latency. These data centers are often located in or near urban areas, so any policies adopted here or in other proceedings should be mindful that urban and suburban satellite gateways are and will continue to be a growing trend in order to meet the needs and expectations of consumers. Gateway proximity to a data center, or internet point-of-presence, is a key driver of end-user latency and the customer experience, meaning unnecessary limitations on gateway deployment in or near urban areas would decrease connectivity performance for UK citizens, particularly for critical applications like emergency response, telehealth, streaming, banking, government use, and more.</p> <p>SpaceX agrees with Ofcom’s assessment that the evidence “suggests that the secondary market has not provided satellite operators with sufficient certainty that they will be able to acquire the spectrum they require for satellite gateways across the 28 GHz band.” SpaceX has firsthand experience with challenges in the secondary market both in terms of timing, where SpaceX has experienced significant delays in negotiating agreements for use of the 28 GHz band, and high costs for spectrum access. Given the current framework for the 28 GHz band—including the division of the band among multiple Spectrum Access licensees, there is the potential for a given license holder to exert unreasonable market power in the form of financial or other commercial gains. This</p>

Question	Your response
	<p>creates problematic market conditions that prevent efficient use of the spectrum and ultimately harm UK citizens, particularly those in rural and remote areas. The Ofcom proposal will remove those incentives and facilitate more efficient access to this important gateway spectrum.</p> 
<p>Question 2: If we decide to proceed with this proposal to license satellite gateways to access 28 GHz spectrum in portions of the band not currently available for satellite gateways, do you agree with our proposal not to adjust Spectrum Access licence fees to reflect locations where we authorise future satellite gateways? If not, please provide reasons/evidence for your response.</p>	<p>Confidential? – No</p> <p>SpaceX agrees with Ofcom’s proposal not to adjust spectrum access license fees and believes the current fee framework is sufficient to address the relevant concerns. Generally, spectrum fees in shared bands should remain reasonable, predictable, and based on a cost-recovery framework. SpaceX believes Ofcom’s current approach to fees aligns with this philosophy.</p>

Question	Your response
<p>Question 3: Do you have any further views / comments on our proposal to license satellite gateways to access 28 GHz spectrum in portions of the band not currently available for satellite gateways?</p>	<p>Confidential? – N</p> <p>SpaceX strongly supports Ofcom’s proposal to directly license satellite gateways to access 28 GHz spectrum that is currently authorized to Spectrum Access licensees and appreciates Ofcom’s forward-looking approach to this critical satellite band.</p> <p>Regarding the specifics of the proposed process, however, gateway site planning is complicated by the lack of visibility into the Spectrum Access deployments, making it difficult to anticipate the locations that are least likely to have a material impact to the Spectrum Access licensee. Ideally, as Ofcom suggests, satellite operators would have access to a list of existing and planned Spectrum Access licensee deployments so gateway sites could be chosen in a way that minimizes potential impact. This could be accomplished with a database where operators are required to upload their sites or link data into a database to facilitate transparent information sharing and to streamline coordination processes. If that is not feasible, though, we suggest a rapid review process where potential sites could be checked with the incumbents quickly. In order to facilitate future growth of satellite services in the UK, and co-existence with existing licensees, a streamlined process to facilitate information sharing is necessary.</p> <p>SpaceX further agrees with allowing applications for satellite gateway access to the currently unallocated spectrum blocks in the Northern Ireland and London regions at 28.1925 – 28.3045 GHz and 29.2005 – 29.3125 GHz. As demand for satellite broadband continues to grow, Ofcom should expect the need for gateway infrastructure to grow as operators move quickly to close the digital divide.</p>
<p>Question 4: Have we correctly identified the possible uses of the returned spectrum? If not, what other potential uses should we consider?</p>	<p>Confidential? – N</p> <p>SpaceX does not have other uses to suggest, but asks Ofcom to carefully consider the impact of any new uses on satellite gateway and fixed link uses in the band.</p>

Question	Your response
<p>Question 5: As a satellite operator, are you currently constrained by the amount of spectrum available in the 28 GHz uplink and 18 GHz downlink to provide your planned and or existing satellite services to UK consumers and citizens? If so, please explain what constraints exist in each band.</p>	<p>Confidential? – Y</p> 
<p>Question 6: Do you agree with our initial view that alternative use of the returned spectrum would be an allocation decision for either point-to-point fixed links or land-based satellite terminal use because it is unlikely both services can share and auctioning the spectrum is unlikely to secure optimal use? If not, please provide evidence to support your response.</p>	<p>-</p>
<p>Question 7: Do you agree with our initial view to make 112 MHz at 28.8365 – 28.9485 GHz available for land-based satellite terminal use, 2 x 112 MHz for point-to-point fixed links at 27.9405 - 28.0525 GHz and 28.9485 - 29.0605 GHz and defer allocating the remaining 112 MHz of spectrum? If not, what alternative suggestions do you have?</p>	<p>Confidential? – Y</p> 

Question	Your response
<p>Question 8: Do you agree with our assessment of how the returned spectrum may be authorised for fixed links and GSO and NGSO land-based satellite terminals? If not, please provide evidence to support your response.</p>	<p>Confidential? N</p> <p>Generally, yes, but it is important that as any links are authorized that they are added to a database to facilitate planning of future gateways.</p>
<p>Question 9: Do you have a view on demand for point-to-point fixed links in Northern Ireland and London in the frequency range 28.1925 – 28.3045 GHz paired with 29.2005 – 29.3125 GHz and our proposed approach that, if we were to decide to make this spectrum available for fixed links, would be to authorise this as Ofcom managed spectrum licensed on a first come first served basis?</p>	<p>Confidential? N</p> <p>As mentioned above, SpaceX notes that gateways will also likely be deployed in or near urban areas and not just (or even mainly, going forward) in rural areas. Gateway location can impact service latency, so policies should not preclude gateways from appearing in and near urban areas. As such, making this spectrum available in Northern Ireland and London will help satellite operators enter the UK market and once in, to grow.</p>
<p>Question 10: Do you have further views / comments that you wish to make in respect of this consultation?</p>	<p>SpaceX appreciates Ofcom’s approach to improve spectrum access for satellite gateways as a means of securing optimal use of the band for the benefit of UK citizens and consumers.</p>

Please complete this form in full and return to 28ghz@ofcom.org.uk.