Your response

Question	Your response
Q1: Do you agree with our proposal to open access to the bands shown in Table 1 for satellite gateway use under the existing NGSO gateway and PES licences with the associated licensing process and fees? Are there other uses of these frequencies which you would prefer to be authorised in these bands?	Confidential? –N We very much welcome Ofcom's proposals to make 560 megahertz of additional spectrum available in the 27.5-30GHz band for FSS services. A direct relationship exists between: (i) the spectrum available for satellite broadband networks; (ii) the number of consumers who can be served with a given satellite; and (iii) the cost of the service to end-users. The ViaSat-3 satellites are designed to yield an unprecedented 1+ Tbit/s of total throughput and our next generation ViaSat-4 satellites will produce 5 to 7 times that capacity, yielding further significant cost-efficiency gains. To provide such capacity that enables provision of reliable and affordable satellite broadband connectivity to hundreds of millions of end users and even more devices on land, air and sea requires access to the entire Ka band, including the guard bands. Notably, Viasat satellite network designs are able to use the same part of the spectrum for user terminals and gateways, employ highly intensive frequency reuse with a significant number of spot beams, all contributing towards high overall spectrum reuse and efficiency of the network. In paragraph 1.4 Ofcom indicates that the proposals would enable connecting more rural homes and businesses in hard-to-reach areas, including offshore energy facilities and utilities as well as for transport use (including aircraft, drones and ships) across the UK. However, to realise the full potential of next generation satellite networks and accomplish Ofcom's goals including for transport use, Ofcom must implement ECC Decision (8 March 2013) on the use, free circulation, and exemption from individual licensing of Earth stations on mobile platforms (ESOMPs) in the frequency bands available for use by uncoordinated FSS Earth stations within the ranges 17.3-20.2 GHz and 27.5-30.0 GHz. Viasat urges Ofcom to

	implement this decision across the full band without further delays. For many years and especially due to the unavailability of an international framework in Radio Regulations, Ofcom only licensed ESIMs in portions of the Ka band which were available for uncoordinated FSS use. With the conclusion of WRC-19 Agenda Item 1.5 that validated use of the bands 27.5-29.5 GHz and 17.7-19.7 GHz for the operation of GSO ESIM globally, it is only appropriate that Ofcom now take the necessary steps to allow operation of GSO ESIMs across these bands nationally. Viasat recommends Ofcom to adopt and implement the latest revision of ECC Decision (13)01[1] that is based on the core principle of Radio Regulations Footnote 5.517A and Resolution 169 (WRC-19) - provisions to ensure that maritime and aeronautical ESIMs do not cause unacceptable interference and that only apply when ESIM operate in frequencies overlapping with allocated and authorized frequencies for terrestrial services. This use case is the basis for ECC DEC (13)01[2] which was only partially implemented (within the bands 27.5 – 27.8185 GHz, 28.4545 – 28.8265 GHz and 29.4625 – 30 GHz) for operation in UK territory on the 25-062014 via IR2093[3]. This action would align the UK with the harmonised European framework. In addition, paragraph 3.1.a) of the current satellite earth station[4] network licence allows station(s) operating with geostationary satellites to transmit within one or more of the following frequency ranges 27.5-27.8185 GHz, 28.4545-28.8265 GHz, 29.4625-30 GHz. These blocks are also used for gateways as proposed for the unassigned 560 MHz of spectrum

[1] *See*, Electronic Communications Committee (ECC), Decision (13)01, "The harmonized use, free circulation and exemption from individual licensing of Earth Stations On Mobile Platforms (ESOMPs) within the frequency bands 17.3-20.2 GHz and 27.5-30.0 GHz," (approved 8 March 2013; latest amended 2 July 2021), https://docdb.cept.org/download/3452.

[2] ECC Decision of 8 March 2013 on the use, free circulation, and exemption from individual licensing of Earth stations on mobile platforms (ESOMPs) in the frequency bands available for use by uncoordinated FSS Earth stations within the ranges 17.3-20.2 GHz and 27.5-30.0 GHz.

[3] https://www.ofcom.org.uk/__data/assets/pdf_file/0030/84684/ir_2093.pdf.

[4] https://www.ofcom.org.uk/__data/assets/pdf_file/0021/247404/esn-licence-template.pdf.

	(including for adjacent use with spectrum access at 28.4455GHz and 29.4525GHz and previously at 27.8285GHz and 28.8365GHz for Arqiva). Therefore, it can be incorporated automatically into the network licence for uncoordinated satellite terminals operating with geostationary satellites. We support Ofcom's proposals to make 2*224MHz (previously owned by Arqiva) of additional spectrum available in the 27.5-30GHz band for FSS services (gateways, uncoordinated FSS terminals and ESOMPs). Arqiva made its spectrum access licence. variation request on spectrum efficiency grounds because it was only lightly using its **national** spectrum block. The return of the unused **near-national spectrum** (Arqiva retained three locations for gateways) to be reauthorised by Ofcom is greatly valuable to the satellite industry. Enabling only gateways (limited in numbers and localised) in the 2*224MHz near-national spectrum without having considered what it means to uncoordinated FSS and ESOMPs may lead to a different conclusion and yet again sub-optimum use of spectrum. Noting that uncoordinated FSS use and ESOMPS devices will be considered in the next few months, it is prudent to consider all services at the same time as this analysis may lead to different proposals for the band. Enabling gateway use in the four 28-megahertz guard bands alone needs to be considered with the conditions to access spectrum in the adjacent "spectrum access" blocks to allow for usable channel sizes of 500MHz. Modern satellite broadband gateways usually operate with channels about 500-megahertz bandwidth and more. By exploring all three types of FSS devices across the full KA band will allow the industry to understand better the opportunities if any to access the awarded "spectrum access" blocks on a shared basis with the incumbent services. We therefore urge Ofcom to complement their conclusions on Gateways with similar analysis on :

	1. use of uncoordinated FSS terminals in portions (unassigned spectrum and or guard bands) or in the whole band (27.5-30 GHz) including the awarded “spectrum access” block sharing conditions. 2. use of ESOMPs terminals in portions (unassigned spectrum and or guard bands) or in the whole band (27.5-30 GHz) including the awarded “spectrum access” block sharing conditions. With all these pieces of analyses, Ofcom, the incumbent services, and the industry will be best informed to provide their views on the optimum way forward.

Question	Your response
Q2: Do you agree with our initial assessment that our proposals would benefit citizens and consumers and would not materially affect existing users of the 28 GHz band as well as future users of the unassigned spectrum?	Confidential? – Y / N To achieve the full benefits for citizens and consumers, the full KA band must be opened to gateways, uncoordinated FSS terminals and ESOMPs. Viasat urges Ofcom to assess the benefits of enabling user terminals and ESOMPs in the full KA band as part of this exercise and deduct the associated conditions. This approach would ensure that the implementation of gateways only does not negatively impact the opportunities for ESOMPs and uncoordinated FSS use. We invite Ofcom to not conclude on the gateway proposals until use of uncoordinated FSS terminals and ESOMPS has also been considered with and without non-incumbent gateways especially as most of the issues have already been addressed in the current FSS blocks (user terminals and gateways).

Question	Your response
Q3: Do you have further views / comments that you wish to make in respect of this consultation?	Confidential? – Y / N Viasat supports maximizing spectrum use by enabling the use of “gateway-type” satellite earth stations on a coordinated basis in the portions of the 28 GHz band that were part of Arqiva spectrum access licenses as well as guard bands associated with this license. As stated in 2.3 “Satellites operators typically require the entire 28 GHz band to operate their gateways”.

Question	Your response
	Ofcom should consider finding a possibility to introduce gateway use in the entirety of 28 GHz band. ECC Decision (05)01 outlines that coordinated FSS earth stations can still make use of the whole band 27.5-29.5 GHz, using established co-ordination procedures. Ofcom could make available a coordination tool to all parties to facilitate spectrum sharing whilst protecting incumbent users. FSS satellite gateways need to have access to wider spectrum channels to support modern satellites throughput. In 3.14 of the Consultation Ofcom proposes that the fees for NGSO gateway licenses is based on cost recovery and are currently set at £500 per license per year. However, the fees associated with licensing a Permanent Earth Station (gateway for GSO systems) are based on complex administrative incentive pricing algorithm, that takes account of several factors (*i.e.*, band, bandwidth, paths, power) not utilized in setting fees for NGSOs. Surely the objective for both types of services are the same and spectrum fees for both should be the same to encourage: • innovation, • ensure full competition between operators to lower the cost services to consumers and citizens, • administrative cost recovery of spectrum management, • reflect the opportunity cost of spectrum use. Currently, these two very different approaches as defined in the Ofcom satellite earth station

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	guidance document[5] lead to an inappropriate competitive advantage for NGSO operators relative to GSO operators. For example, if a non-GSO operator already has a 28 GHz license, then, after approval of the license variation, it can have access to an additional 560 megahertz of spectrum at no additional cost. The GSO operator would have to pay an additional fee to access the 560 megahertz of spectrum addressed in this consultation. Moreover, the current fees structure is focused on the number of sites uses and ignores the numbers of antenna per sites and their directivity. NGSO operators use multiple antennas at their sites, pointing in many different directions dynamically (using a wide range of azimuths and elevation angles) , while GSO operators (which utilize separation between gateway antennas to allow frequency re-use) will be pointing only in one direction towards a single GSO satellite using a narrow beam antenna footprint. As per section 3.17 Ofcom's will review the fee structure for NGSO. We believe Ofcom will also need to review the fees for Satellite Permanent Earth Station to ensure a consistent approach to all satellite systems configurations.

[5] https://www.ofcom.org.uk/__data/assets/pdf_file/0020/27461/fees.pdf.