Organisation (if applicable):

ViaSat UK

What additional details do you want to keep confidential?:

No

If you want part of your response kept confidential, which parts?:

N/A

Ofcom may publish a response summary:

Yes

I confirm that I have read the declaration:

Yes

Additional comments:

ViaSat UK is in the business of producing innovative satellite and other digital communication products that enable fast, secure, and efficient communications to any location. ViaSat brings today's new communication applications to people out of reach of terrestrial networks, in both the commercial and government sectors, with a variety of networking products and services. At this time ViaSat operates several satellites: ViaSat-1 at 115 W, WildBlue-1 at 111.1 W, and ViaSat-KA 89W at 89 W, also ViaSat-2 is under construction for 70 W. In addition ViaSat either owns or leases satellite capacity on over 24 spacecraft around the world. ViaSat manufactures mobile terminals in the Ku- and Ka-band. ViaSat's ArcLight mobile satellite communication technology which enables use of sub meter antennas for use with C, Ku, and Ka band in motion earth stations is now also being used in the Ka-band for payload only use on unmanned aircraft. At this time we do not manufacture any terminals for Control and Non-Payload Communication (CNPC).

Question 1: Do you have any comments on the mechanism for UK preparation for WRC-15 and the role of Ofcom in this process?:

Question 2: Do you agree with the prioritisation of the agenda items, as shown in Annex 6, and if not why?:

As a manufacturer and operator, Agenda Items 1.5 and 7 are high priority for ViaSat, as well as the Director's Report regarding ESOMPs. Agenda Item 1.8 is of medium priority, as explained in the response to question 20 below.

Question 3: Do you agree with Ofcom?s general approach on WRC-15 agenda item 1.1?:

Question 4: In view of the recent developments on the 1 492 - 1 518 MHz and 5 925 - 6 425 MHz bands, what are your views on the potential identification of these bands for IMT and/or RLAN and on the mobile data applications that could make use of them? How do you believe the sharing with the fixed service and the fixed satellite services could be managed at the national level?:

Question 5: For the band 1 427 ? 1 452 MHz, do you agree that it is right to support the further consideration of the band, recognising the Ministry of Defence interest?:

Question 6: For the band 1 452 ? 1 492 MHz, which is already subject to a harmonisation measure within CEPT, do you agree that this band be supported for an IMT identification at WRC-15?:

Question 7: Recognising the UK plans to release spectrum in the 3 400 ? 3 600 MHz band, coupled with the binding European Commission Decision (for electronic communications services) in the bands 3 400 ? 3 600 MHz and 3 600 ? 3800 MHz, do you agree that these bands should be supported for both a co-primary mobile allocation and IMT identification?:

Question 8: Noting that there are a number of countries that strongly oppose the inclusions of the 3 800 ? 4 200 MHz band, do you agree that we should support the longer term consideration of this band for potential mobile broadband use?:

Question 9: Noting that there is currently limited international support for a co-primary mobile allocation in the band 2 700 ? 2 900 MHz, do you think that we should continue to support this band at WRC-15?:

Question 10: Do you agree that the 5 350 ? 5 470 MHz and 5 725 ? 5 925 MHz bands could provide important additional capacity for Wi-Fi and similar systems? If so, and noting the need to protect both earth observation satellites and radar systems, do you agree that sharing solutions should be considered at WRC-15? :

Question 11: Do you agree that we should oppose a co-primary mobile allocation at WRC-15 for the band 470 ? 694 MHz?:

Question 12: Do you agree that the UK should continue to support harmonisation of 694 - 790 MHz for mobile broadband and an out-of-band emission limit for protection of DTT reception in an ITU R Recommendation, alongside an acknowledgement that 694 MHz should be the lower frequency boundary for the band?:

Question 13: Do you agree that any harmonisation measures for PPDR use should be sufficiently flexible to enable PPDR agencies to choose the most appropriate spectrum solutions nationally?:

Question 14: Do you have any comments on the potential use by the amateur service in the 5 250 to 5 450 kHz band?:

Question 15: Do you agree that if any allocations to the fixed satellite service in the 10-17 GHz range impose undue constraints on existing services then further studies on the demand and justification for use of the spectrum would need to be carried out?:

Question 16: Do you agree that the UK should support retaining the recognition for aeronautical radionavigation use, but equally support reviewing the limits associated with the FSS with a view to facilitating better use by the FSS?:

Question 17: Do you agree that the UK should support new primary allocations for the fixed-satellite service in the 7/8 GHz bands, with the proposed restrictions?:

Question 18: Do you agree that the UK should not support new allocations for the mobile satellite service in 22-26 GHz as they are not justified and that the focus should instead be upon the continued protection of the incumbent services?:

Question 19: What are your views on the use of FSS spectrum allocations for UAS, recognising the shared regulatory responsibility and the safety considerations for the control of unmanned aircraft?:

ViaSat, as a satellite operator, is on board with the satellite industry supporting the use of existing FSS spectrum for CNPC and having major concerns with adding a new "safety of life allocation" in existing FSS spectrum. The CAA solution of adding a safety of life allocation (aeronautical mobile safety route service) within the FSS frequency bands of this "super" primary allocation could be agreed to by all if this new allocation would not "upset the apple cart" of the FSS satellite coordination process. We do not, however, believe that this is possible.

No. 4.10 would be in effect, stating that "Member States recognize that the safety aspects of radio navigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies." However, for two satellite networks in coordination (Network A and B), if Network A provided an AMS(R)S, and Network B did not, Network A could affect the operations (limit power spectral density, service area etc.) of Network B, in order to provide the additional margin on the link to provide a safety-of-life service, or "notch" out this particular carrier. Network A would have every right to do so, since a route service allocation has priority over all other allocations in the ITU. For satellite operators

with orbital positions that will not provide UAS service, they will be disadvantaged by a safety-of-life allocation in the FSS. ICAO will develop the standards which satellite operators will have to meet before they can provide this service in non-segregated airspace. This could have a significant impact on major satellite operators £Bns of investment and other operational services.

Based on the Report ITU-R M.2171, the maximum amount of spectrum required for UAS CNPC links is 56 MHz for the satellite component assuming regional beams with suitable antenna discrimination. However this estimation could rise to 169 MHz when using small aperture antenna with limited discrimination in lower frequency bands. Using the Ka-Band as an example, the CAA proposes an AMS(R)S allocation in the 17.3 - 20.2 GHz and 27.5 - 30.0 GHz bands. Manufactures of these CNPC radios could be designed to operate anywhere within this frequency range, and different frequency bands within the range could be used. Actual use of the required 56 MHz sprinkled across different portions of 2+ GHz of spectrum will affect the use of multiple transponders and across multiple spot beams of the non-UAS satellite operator coordinating with the UAS provider of service. In the case of high throughput Ka-band satellites employing high orders of frequency reuse, the impact of the required 56 MHz is multiplied many times over. This concern also applies to the proposals that have been put forward supporting the use of existing FSS allocations and adding a footnote to all of the FSS spectrum in the Ku-band and Ka-band. Consideration should be given to reducing the amount of identified necessary FSS spectrum for CNPC use.

Within the ITU, ViaSat believes consideration should be given to using the proper amount of existing FSS allocations with specific requirements (footnote and resolution) placed on the use of this service. The view of industry regulatory and technical experts is that the body of evidence in the current approach (robust links, extra gain built in, and often dual links in Ku and L for redundancy) has proven successful and there is no need to add an AMS(R)S allocation.

Question 20: Do you have any view on the need, or otherwise, to modify the restrictions that relate to the operation of ESVs in the bands 5 925 ? 6 425 MHz and 14-14.5 GHz?:

ViaSat operates ESVs in the 14-14.5 GHz band. Current regulations with respect to Res 902 restrict minimum antenna size without considering advancements in technology, particularly spread spectrum. ViaSat has demonstrated the ability to operate at power density levels much lower than those contemplated by Res 902, while at the same time using an antenna smaller than the 60 cm minimum size. Accordingly, ViaSat would like to see the minimum antenna size restriction lifted.

Question 21: What are your views on a potential new allocation to the maritime mobile satellite service, recognising the UK interest in the other services that make use of the bands under consideration?:

Question 22: Do you agree that the UK should not support a proposal for additional UHF spectrum for maritime on-board communications and that narrower channels will help to increase capacity?:

Question 23: What are your views on any necessary regulatory provisions for AIS in the bands already identified for maritime use?:

Question 24: Where the appropriate radio regulatory provisions are established for use in existing aviation related bands, do you agree that the UK should support regulatory conditions for the accommodation of WAIC applications?:

Question 25: Do you agree that the UK should support a generic radiolocation allocation in the 77.5-78 GHz band, where appropriate technical conditions are established?:

Question 26: Do you agree that the UK should support an allocation across the 7 190 ? 7 250 MHz band, dependent upon the outcome of technical studies?:

Question 27: Do you agree that is right to wait for the relevant sharing studies to mature before coming to a final position on the potential for additional allocations to the earth exploration-satellite (active) service in the 8/9/10 GHz band?:

Question 28: Do you agree that the UK should support the CEPT position that removes the distance limitation on space vehicles communicating with orbiting manned space vehicles, whilst retaining the pfd limit to protect terrestrial services?:

Question 29: Do you agree that the UK should support maintaining UTC as currently defined (i.e. with the inclusion of leap seconds) and that the UK should support further study around the concept of dissemination of two reference time scales?:

Question 30: Do you have any comments on the UK approach and positions on the elements of Agenda Item 7?:

7.7: Informing the BR of a suspension under No 11.49 beyond six months

Support method A2, option A, day for day reduction after 6-months.

7.8: Publication of information on bringing into use of satellite networks on the ITU website

Support method B2, on receipt of the information, the Bureau shall publish it in the BR IFIC and make it available on the ITU website.

7.10: Review of the advance publication mechanism for satellite networks subject to coordination under Section II of Article 9 of the Radio Regulations

Support method C5, suppressing the six-month minimum period between the date of receipt

of an API and the date of receivability of the associated coordination request.

7.11: Comprehensive review of radio regulatory process under WRC-15 agenda item 7

Support NOC for this item. Do not support overhaul of Article 9/11, and at this time no methods have been proposed. Support piecemeal improvements to the advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks.

Issue D: General use of modern electronic means of communications in coordination and notification procedures

Support method D - modern electronic means can be used instead of "telegram", "telex" or "fax" and implement a consolidated approach for both the submissions of satellite network filings and their related correspondence if appropriate.

Issue E: Support Method E3, NOC, regarding failure of a satellite during the 90-day bringing into use period.

Issue X: No comment.

Issue Y: Support Method Y3, removal of six month requirement between API and CR/C as a solution.

Issue [XX]: No comment.

Question 31: Do you agree that any potential regulatory constraints need to be fair and proportionate on both the Cospas-Sarsat operation and users in the adjacent band?:

Question 32: Do you have any comments on Agenda Item 9.1.2 concerning reduction of the satellite co-ordination arc?:

Support retaining Delta T/T criterion and the BR Director contribution 4A/579. Also, support no reduction of the coordination arc in the Ka-Band.

Question 33: Do you agree that the UK should oppose any proposal that aims at changing the provisions of the Radio Regulations in a way that gives inherent priority (i.e. coordination priority) to certain satellite systems over any other satellite system?:

Support NOC for Agenda item 9.1.3, as there is no need to make regulatory changes to the Radio Regulations. Support ITU-R and ITU-D implement joint activities to further support capacity building and knowledge sharing in the area of satellite communications.

Question 34: Do you have any comments on Agenda Item 9.1.4 relating to updating the RR for out of date or redundant material?:

Question 35: Do you have any view on the need, or otherwise, for additional international regulatory measures to support the use of earth stations for aeronautical and meteorological communications in the 3.4 ? 4.2 GHz band?:

Question 36: Do you agree that the UK should not support any change to the fixed and mobile definitions under Agenda Item 9.1.6?:

Question 37: Do you have any views on the CEPT position that no further work is required in respect of spectrum management guidelines for emergency and disaster relief radiocommunications?:

Question 38: Do you agree that no specific measures need to be introduced for nano and pico-satellites and that the current approach to their regulation is sufficient?:

Question 39: Do you agree that the UK should support the recent regulatory developments with respect to ESOMP operation, while continuing to monitor developments?:

As a manufacturer of earth stations in motion, using the fixed-satellite service, ViaSat fully supports the input contributions into the most recent PT-B meeting. ViaSat looks forward to elevating the status of these earth stations in the 27.5 - 30 GHz band. The 29.5-30 GHz band is an easier problem to solve at WRC-15.

Question 40: Do you have any comments on Agenda Item 9.3 considering Resolution 80?:

Question 41: Do you have any comments concerning the standing agenda items?:

Question 42: Do you have any comments regarding UK positions for future WRC agenda items?:

ViaSat believes it is very important to focus the Agenda Items for WRC-19 to a manageable set or range of frequency bands in which studies are given due process by the incumbents. An Agenda Item searching for more IMT identified bands in the range 6 GHz - 95 GHz is unmanageable.

Question 43: Are there any other possible agenda items you wish to see addressed by future WRCs?:

Earth stations in motion using the FSS in the band 27.5-29.5 GHz requires studies with incumbent services, and ViaSat is interested in studying this range during the next cycle.

Question 44: Are there particular frequency bands, above 6 GHz, that should be considered for technical study in relation to the potential future agenda item addressing IMT use?:

An operator in Asia has mentioned the following bands of interest for this particular Agenda item: 13.4 - 14.0 GHz, 18.1 - 18.6 GHz, 27-29.5 GHz, and 38 - 39.5 GHz. ViaSat does not support an Agenda Item specifying studies in the 6 GHz - 40 GHz frequency range. Much smaller frequency ranges need to be determined for study. In the Ka-Band and V-Band frequencies listed above, a mobile allocation already exists in the Radio Regulations. ViaSat has a large level of investment in on-orbit systems and future launches for High Throughput Satellites in the 27.5 - 30 GHz and 17.7 - 20.2 GHz bands.