European Satellite Operators' Association (ESOA)

Additional comments:

The European Satellite Operators' Association ("ESOA") is a non-profit European organisation established with the objective of serving and promoting the common interests of European satellite operators. The Association is the reference point for the European satellite operators' industry and today represents the interests of 11 satellite operators who deliver communication services across the globe. ESOA also maintains close working relationships with other regional organisations representing satellite operators, and with the European Commission and the Satellite Action Plan Regulatory Working Group ("SAP-REG").
ESOA members are grateful for the opportunity to respond to OFCOM's consultation on the future demand for mobile broadband spectrum and consideration of potential candidate bands in line with Agenda item 1.1 of WRC-15.
ESOA's response is limited to Question 8 on frequency ranges under discussion in JTG 4-5-6-7.

Question 1: How much do you expect UK mobile data demand to change in the period 2015-2030? Please provide evidence for the trend and, where possible, please indicate how demand might vary across the device categories listed in paragraph 4.7. How should we account for factors (including pricing) that would constrain demand?:

No response

Question 2: What evidence do you think is relevant to assessing the extent of consumer benefits associated with meeting the increase in demand for mobile data?:

No response

Question 3: What proportion of mobile data traffic do you expect to be carried over (a) Wi-Fi and similar systems in licence-exempt spectrum and (b) mobile networks in licensed spectrum? How do you expect this to change over the period 2015-2030 and how do you expect total data demand for Wi-Fi and similar systems in licence-exempt spectrum to change over the same period? How might this vary by location, environment etc.?:

No response

Question 4: What factors will act to change the spectral efficiency of mobile technologies in the future? What spectral efficiency values are appropriate for consideration in our study for the period 2015-2030?:

No response

Question 5: What service bit rate values are appropriate for consideration in our study for the period 2015-2030? What evidence do you have of changing needs for service bit rates?:

No response

Question 6: What proportion of traffic do you consider should be assumed to be carried on each cell types for the period 2015-2030? How will this vary with service environment i.e. between home, office, public areas, rural, suburban and urban? What evidence do you have of the factors affecting the uptake of small cells in licensed spectrum in the future?:

No response

Question 7: Given the current mix of services on cellular networks what is the ratio of downlink to uplink capacity currently dimensioned for and how would you expect this to change over time by 2015, 2020, 2025 and 2030? How do you expect the ratio of downlink to uplink demand to vary for the service categories given in Table A5.4 of Annex 5, and what factors might affect this? How does this ratio of downlink to uplink capacity change (if at all) with network radio access technology and offload to licence-exempt systems?:

No response

Question 8: What are your views about the pros and cons of the frequency ranges in Table A6.1 in Annex 6 for mobile broadband and for existing applications using this spectrum? Do you have views on other bands that are not in Table A6.1?:

Answers to Question 8:
1518 - 1559, 1626.5 - 1660.5 and 1668 - 1675 MHz:
These bands are extensively used by some ESOA Members for MSS operations. Studies have already concluded that sharing between MSS and mobile broadband, including terrestrial IMT, is not feasible. These bands are not suitable for use by terrestrial wireless systems such as IMT.
2025 - 2110 and 2200 - 2290 MHz:
These bands are used by many ESOA operators' satellites for space operations (telemetry and telecommand of the satellites). Sharing with mobile broadband is not feasible; therefore, these bands are not suitable for use by terrestrial wireless systems such as IMT.

3400 - 4200 MHz:
C-band FSS downlink frequencies are used throughout the world for FSS systems by several ESOA operators. Sharing studies have already been conducted (see Report ITU-R M.2109) showing that required separation distances result in sharing being not possible. As this band was considered at WRC-07, it should not be considered anymore for new studies, nor should it be considered as a candidate for further identification for IMT, beyond the footnotes added in the band 3400-3600 MHz at WRC-07.

4500 - 4800 MHz:
This is the ITU downlink FSS Plan (RR Appendix 30B). Sharing studies have already been conducted (see report ITU-R M.2109 and M.2119) showing that co-frequency co-coverage is not feasible. Furthermore, the use of this band for mobile broadband would undermine ITU Member States intention of ensuring equitable access to the geostationary orbit by all countries. Therefore, this band should not be considered anymore for further studies.

In addition, ESOA would like to offer the following comments as these bands have been included in Table A6.1:
5850 - 6425 MHz:
Introduction of mobile broadband in the C-band FSS uplink frequencies could cause harmful interference to FSS satellites operating in this band. Furthermore, existing FSS transmissions would result in high levels of interference into IMT stations, thus requiring large separation distances between FSS and IMT stations. Maintenance of such large separation distances would severely constrain the future development of FSS Earth stations by ESOA Members. Moreover, such large separation distances, when considered in conjunction with the existing use of this band by the FSS, would also place significant restrictions on the deployment of any IMT or mobile broadband system - potentially making the deployment of such systems infeasible. Accordingly, this band is not suitable for use by IMT and should not be considered anymore for further studies.
13.75 - 14 GHz:
Most ESOA operators use this portion of the Ku-band uplink frequencies. As with the band 5850-6425 MHz, the introduction of mobile broadband could cause interference to FSS satellites and would require large distance separation between IMT and FSS stations; thus, severely limiting the future development of FSS Earth stations by ESOA Operators and placing significant restrictions on the deployment of IMT. Hence, this band is not suitable for use by IMT and should not be considered anymore for further studies.
18.1 - 18.4 GHz:
Several ESOA Operators' satellites use this BSS uplink feeder band. Introduction of mobile broadband would result in the same problems as those associated with the 5850 - 6425 MHz and 13.75 - 14.0 GHz bands. Therefore, this band is not suitable for use by IMT and should not be considered anymore for further studies.

18.1 - 18.6 GHz:
This part of the Ka-band downlink frequencies is used by several ESOA operators and many new Ka-band systems operating in this band are under development. As with C and Ku bands, sharing with mobile broadband is not viable as separation distances would be too large. Hence, this band is not suitable for use by IMT and should not be considered anymore for further studies.

27 - 29.5 GHz:
Several sub-bands have already been identified for high density applications in the FSS for licence exempt stations. Most of the remaining sub-band frequencies are allocated to licensed FSS stations. It has already been concluded that sharing between mobile broadband and high density FSS applications was not feasible, while sharing with licensed FSS stations would result in very large separation distances. Hence, this band is not suitable for use by IMT and should not be considered anymore for further studies.

38 - 39.5 GHz:

This band is allocated to FS, FSS and MSS, with only FS use today. Sharing between FS and FSS would most likely be much easier to implement than sharing between FS and MS, but it is felt that it is too early to consider such a band for mobile broadband applications.

Question 9: Are there any other bands that are not in Table A6.1 for which you think we should be considering their pros and cons for mobile broadband and for existing applications using this spectrum? :

No response

Question 10: What are your views on bands which should be a priority for consideration for mobile broadband?

No response