Your response

Question	Your response
Section 3 –Spectrum use by the PMSE sector in the UK **Question 1**: What are your views on how our processes work - for example our online booking system, turna-round times, and event coordination. Do you think the current approach works well? How could we improve it?	Confidential? – N Yes I would agree the current approach works well. But I would request that the Portal is modernised/up-dated as its long overdue.
Section 4 – PMSE historic trends **Question 2**: Do you have any com-ments on how we have analysed and characterised wireless microphone and IEM demand, or suggestions for alternative ways of characterising this demand?	Confidential? – N No
Question 3: Do you have any com-ments on how we have analysed and characterised wireless video demand, or suggestions for alternative ways of characterising wireless video demand?	Confidential? – N No

Question	Your response
## Section 5 – Future trends and opportunities ## Wireless audio ### Drivers of demand **Question 4:** What factors have driven changes in the demand for audio PMSE applications, specifically for: a) the increased use of coordinated wireless microphones and IEMs, particularly the peak number of simultaneous assignments used at the largest events? b) the slight decline in the number of national wireless microphone licences (UHF channel 38 and VHF)? Has the extent of use of these licences changed, and if so why? c) the declines in talkback, fixed audio links and ADS licences?	Confidential? – N A) Servicing the requirements of the Live Music and Conference sectors we have seen a year on year increase in bands using IEM Systems over traditional monitor wedges. This trend is driven by factors including personal preference, improved ear protection, clearer listening reference for performance and communication between performers and technicians. Budget is also a factor as the cost of touring IEMs over wedges requires less physical transport space and is also more adaptable in different performance situations. Wireless microphone demand has perhaps seen a large increase in demand purely to increase in Live Music Events and Concerts/Festivals in the UK. This increase in professional usage and the need for reliability for performances has meant that more and more licencing RF Equipment is a mandatory requirement. b) We decline to use UHF Ch38 due to potential for interference.
Question 5: What factors could drive further changes in the demand for audio PMSE applications in the future, and what will this mean for future demand, specifically for: a) coordinated wireless microphones and IEMs, particularly the peak number of simultaneous assignments used at the largest events? b) national wireless microphone licences (UHF channel 38 and VHF)?	Confidential? – N A) I can only see the demand increasing as while technology is slowly improving it is certainly struggling to keep pace with demand – Digital IEMs have come along and while they are dramatically reducing the physical space required and opening up lots of additional control/monitoring along with reduced spectrum use I think we will continue to see more and more demand for IEM's and Radio Microphones in the coming years as they offer a level of remote control that wired microphone and monitor wedges do not offer...

Question	Your response
c) talkback, fixed audio links and ADS licences?	
Question 6: Do you agree that, given the trends, we are right to focus on wireless microphones/IEMs?	Confidential? – N Its is a critical part of the technological infrastructure for the Live Event and Concert Industry in the UK and a major contributor to the Economy that is sadly overlooked.
Changes in the take-up of bands already available **Question 7:** What factors have driven the take-up of different bands for wireless audio? What are the barriers to greater use of the DME band?	Confidential? – N More flexibility within our own inventory and offering to clients. This helps to deliver on large scale events (Festivals etc) and broadcast events where certain bands are oversubscribed and alternatives are required. It can also be a case of getting what is available from the manufacturers at that point in time to meet demand – it is sometimes Manufacturer led.
Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?	Confidential? – N
Changes in spectrum availability **Question 9:** Which potential additional bands might be suitable for wireless audio applications, particularly microphones and IEMs at the largest events and venues?	Confidential? – N I would defer to Manufacturers like Shure and Sennheiser for this.
Question 10: To what extent do the characteristics of different audio applications drive their requirements for spectrum – for example particular requirements for latency, resilience or capacity?	Confidential? – N Defer to Manufacturers

Question	Your response
Changes in efficiency of spectrum use **Question 11:** What changes in spectrum use (technology, working practices, different bands, etc) have enabled audio wireless growth to be accommodated to date, particularly the increased use of wireless microphones and IEMs at the largest events and venues in the context of reduced UHF spectrum availability?	Confidential? – N Technology driven by Manufacturers to fit more into the limited spectrum we have to work with has helped. But progress is slow. Advances in this technology takes time and investment and the end product has to be affordable to the end user which is an incredibly fine line.
Question 12: What technologies are currently available or are being developed which can improve audio spectrum efficiency in the future, particularly in the use of wireless microphones and IEMs at the largest events and venues?	Confidential? – N Shure Axient & Sennheiser Spectera are good examples. These are what are mainly requested by professionals.
Question 13: Are there any barriers to adopting more efficient technologies for audio applications, particularly for wireless microphones and IEMs at the largest events and venues? What could industry do and what could Ofcom do to facilitate greater use of those technologies?	Confidential? – N Defer to Manufacturers
Question 14: What changes to working practices and spectrum planning could improve audio spectrum efficiency in the future, particularly in the use of wireless microphones and IEMs at the largest events and venues?	Confidential? – N A modernised Portal & System for booking licences via Ofcom is long overdue.
Question 15: Are there any barriers to adopting working practices that could enable more efficient use of spectrum by audio applications, particularly for wireless microphones and IEMs at the largest events and venues? What could industry do and what could	Confidential? – Y / N

Question	Your response
Ofcom do to facilitate those efficiencies?	
## Wireless video ### Drivers of demand **Question 16:** What factors (such as more complex events and use of higher resolution equipment) have driven the demand for wireless video bandwidth, in particular for: a) the increased bandwidth required for the largest sporting events such as Formula 1 at Silverstone and The Open Championship? b) the bandwidth required for nationally important state events such as The Coronation? c) the slow growth or decline in bandwidth used at horse racing fixtures?	Confidential? – Y / N
Question 17: What factors could drive further changes in the demand for wireless video bandwidth in the future, and what will this mean for future demand, in particular for: a) the bandwidth required for the largest sporting events like Formula 1 at Silverstone and The Open Championship? b) the bandwidth required for nationally important state events such as The Coronation?	Confidential? – Y / N

Question	Your response
c) the bandwidth used at horse racing fixtures and other major sporting events?	
Potential new bands **Question 18:** What factors have influenced the degree of take-up of existing bands used by wireless video applications, particularly the growth in take-up of the 7 GHz band?	Confidential? – Y / N
Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?	Confidential? – Y / N
Question 20: To what extent do the characteristics of different video applications drive their requirements for spectrum – for example particular requirements for resilience or capacity?	Confidential? – Y / N
Changes in efficiency of spectrum use **Question 21:** What technologies are currently available or are being developed which can improve wireless video spectrum efficiency in the future?	Confidential? – Y / N
Question 22: Are there any barriers to adopting more efficient technologies for wireless video? What could industry do and what could Ofcom do to facilitate greater use of those technologies?	Confidential? – Y / N
Question 23: What types of video demand could realistically be supported by private (for example 5G) networks?	Confidential? – Y / N

Question	Your response
Question 24: What changes to working practices and spectrum planning could improve video spectrum efficiency in the future?	Confidential? – Y / N
Question 25: Are there any barriers to adopting working practices that could enable more efficient use of spectrum by wireless video? What could industry do and what could Ofcom do to facilitate those efficiencies?	Confidential? – Y / N
Other comments **Question 26:** Do you have any other comments or views on the issues raised in this document?	Confidential? – Y / N

Please tell us how you came across about this consultation.

- x Email from Ofcom
- ☐ Saw it on social media
- ☐ Found it on Ofcom's website
- ☐ Found it on another website
- ☐ Heard about it on TV or radio
- ☐ Read about it in a newspaper or magazine
- ☐ Heard about it at an event
- ☐ Somebody told me or shared it with me
- ☐ Other (please specify)

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