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?	No While the PMSE portal and UHF Planner works, It's showing its age and needs updating, and perhaps even making more mobile friendly.
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?	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?	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?	a) The use of booked coordinated frequencies mainly applies to big budget live events, outside broadcast and multimillion pound feature films. As a whole, TV production and lower budgeted films still heavily rely on Channel 38. b) A lot of sound professionals have either recently left the industry or let their PMSE licenses expire due to the downturn the film and TV production industry has taken, leaving a lot of freelance sound professionals without work. While some news programs and documentaries have started using 2.4GHz technologies for sound capture, no professional sound recordist could ever rely on such technology due to that part of the spectrum already being vastly over saturated, limited range and the wavelengths being too short to reliably work as hidden lavaliere microphone transmitter. c) While ADS licenses generally don't apply specifically to my field in film and TV production, talkback and audio links for camera hops still mostly rely on channel 38 or the 826-832MHz duplex gap. However Channel 38 is always preferred for its long wavelength for ease of traversing obstacles.
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)?	Productions are becoming more complex, and as they evolve we're having to become more and more reactive to changes being brought on us at the last minute on set. Having the extra space within Channel 38 is vital to allow us the flexibility to deploy more wireless microphones than what was originally planned. On top of this, despite Channel 38 being reserved for PMSE applications, there will always be scenarios were we need to retune transmitters to a different frequency within Channel 38 due to noise or other external factors on a given frequency. Resorting to individually booked frequencies adds an extra layer of limitation to this and risks inhibiting us from effectively carrying out our jobs.

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?	No. The frequency bands allocated for PMSE licensees has already been changed once in the last 10 years, forcing a lot of sound professionals and companies to sell and buy new wireless equipment as a result. To suggest the idea of changing again so would have a massive detrimental effect on an already struggling production industry.
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?	As I've previously stated, having individually booked frequencies can become a limitation in the ever-changing nature film and TV production. The cost of hiring frequencies also doesn't make financial sense when Channel 38 is available.
Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?	Bringing down the costs of hiring frequencies.
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?	Any change in spectrum will require a lot of sound professionals and companies to sell off their current wireless equipment. In an already turbulent time in the industry, this would be the final straw for a lot of people and force them out the industry entirely.
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?	Channel 38 offers a long wavelength, giving us a good amount of resilience to obstacles blocking a path of line of sight. While new consumer grade technology is now coming out with 2.4ghz transmission, the latency, congestion and short wavelengths just make it useless for any form of professional sound capture.

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?	Productions are asking for higher and higher wireless channel counts as the number of personal microphones and radio booms required for any given production increase. Channel 38 still offers the best option for expanding our wireless usage, and allows us some space for extra fall back frequencies to fall back onto.
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?	While some analogue wireless systems offer options for wideband and narrowband transmission, digital transmission airs firmly on the wideband side. As digital offers compression free transmission, it's become a favourite for a lot of professionals for its sound quality. From my viewpoint, I can't see a realistic way to gain any more efficiency out of digital wireless microphone system without a detrimental effect to the quality of the audio being transmitted.
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?	n/a
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?	Updating the Ofcom PMSE booking portal website and making it more mobile friendly.
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	Costs of individual hire frequencies, despite already having for an Ofcom PMSE license.

Question	Your response
could industry do and what could 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?	n/a
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?	n/a

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?	n/a
Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?	n/a
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?	n/a
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?	n/a
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?	n/a
Question 23: What types of video demand could realistically be supported by private (for example 5G) networks?	n/a

Question	Your response
Question 24: What changes to working practices and spectrum planning could improve video spectrum efficiency in the future?	n/a
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?	n/a
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.

Social Media

Association of Motion Picture Sound (AMPS)

Institute of Professional Sound (IPS)

Please complete this form in full and return to liz.hall@ofcom.org.uk.