

Your response

| Question | Your response |
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| <p>Section 3 –Spectrum use by the PMSE sector in the UK</p> <p>Question 1: What are your views on how our processes work - for example our online booking system, turn-around times, and event coordination. Do you think the current approach works well? How could we improve it?</p> | <p>While the 24hour online system is appreciated, it is not really up to the standard compared to other online systems. The term “clunky” come to mind. It is also slow and lacking in flexibility to cope with the many and varied PMSE events that happen in this country.</p> |
| <p>Section 4 – PMSE historic trends</p> <p>Question 2: Do you have any comments on how we have analysed and characterised wireless microphone and IEM demand, or suggestions for alternative ways of characterising this demand?</p> | <p>Hundreds of radio microphone and IEM systems are used daily, many are used under a license but others are unlicensed and therefore fall outside your usage statistics. Also systems used under the PMSE shared license can be used a few times a year or 24/7. This usage data is not captured.</p> |
| <p>Question 3: Do you have any comments on how we have analysed and characterised wireless video demand, or suggestions for alternative ways of characterising wireless video demand?</p> | <p>Not applicable for my usage</p> |

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| <p>Section 5 – Future trends and opportunities</p> <p>Wireless audio</p> <p>Drivers of demand</p> <p>Question 4: What factors have driven changes in the demand for audio PMSE applications, specifically for:</p> <ul style="list-style-type: none"> 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? | <ul style="list-style-type: none"> a) Producer expectation that radio microphone systems are extremely reliable and any number of channels will work in any environment and over long range. Expectations have to be managed by technicians such as myself but as an overall trend production requirements are going up not down. b) The usage in broadcast has gone up not down, unable to offer an explanation as to why the shared license usage has gone down. I speculate that licenses have been allowed to lapse or a move by larger scale users to a more reliable fixed site license. c) Greater use of DECT based talkback systems as an alternative. |
| <p>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:</p> <ul style="list-style-type: none"> 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)? c) talkback, fixed audio links and ADS licences? | <p>Confidential? – Y / N</p> |

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| <p>Question 6: Do you agree that, given the trends, we are right to focus on wireless microphones/IEMs?</p> | <p>Yes. Their use is considered the norm and their wire free benefits are embedded into productions. Returning to wired microphones will significantly change modern events.</p> |
| <p>Changes in the take-up of bands already available</p> <p>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?</p> | <p>The reluctance to change. People know what works for them and to try a different band can be considered a gamble. That said, reputation is slowly gaining ground and DME band is being used.</p> |
| <p>Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?</p> | <p>Price. Budget is a great influencer. Even if DME or DECT is a better system to use in a particular situation, if it costs too much to change the likelihood of it happening is slim.</p> |
| <p>Changes in spectrum availability</p> <p>Question 9: Which potential additional bands might be suitable for wireless audio applications, particularly microphones and IEMs at the largest events and venues?</p> | <p>Give back the bands taken in previous changes and are not currently being used by IMT</p> |
| <p>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?</p> | <p>It is expected by producers that radio microphone and IEM systems are equally matched with wired equivalent. Instant, will not fail and you can have as many as you can afford. Latency is an important issue and modern digital radio mic systems are considerably better than before. There are very few digital IEM systems as the combined latency of a microphone and IEM is considered unusable</p> |

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| <p>Changes in efficiency of spectrum use</p> <p>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?</p> | <p>Increased use of spectrum management from a central point rather than just turning it on and hoping for the best.</p> <p>Commercial development of digital based RF technology allowing an increased efficiency of spectrum use.</p> |
| <p>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?</p> | <p>No idea, this is commercially sensitive information.</p> |
| <p>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?</p> | <p>At large events, different sections will import their own RF solutions from their own favoured manufacturer. Many spectrum efficient system work best if the same manufacturer is used across the board. Therefore greater coordination will need to happen. This could be a problem if there is a sonic quality reason why a particular manufacturer is chosen.</p> |
| <p>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?</p> | <p>The response given to Q13 is probably relevant here. Greater coordination with regard to spectrum and technology used. Sadly there might be push back for commercial reasons.</p> |
| <p>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</p> | <p>There must be an obvious benefit recognised in allowing a central coordination of spectrum and technology. The spectrum coordination is often happening if event organisers recognise the importance of spectrum management and are prepared to invest time and money in arranging this. Ofcom could offer to provide this service or advise on a third party.</p> |

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| Ofcom do to facilitate those efficiencies? | |
| <p>Wireless video</p> <p>Drivers of demand</p> <p>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:</p> <ul style="list-style-type: none"> 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? | Not applicable for my use |
| <p>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:</p> <ul style="list-style-type: none"> 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? | Not applicable for my use |

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| c) the bandwidth used at horse racing fixtures and other major sporting events? | |
| <p>Potential new bands</p> <p>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?</p> | Not applicable for my use |
| <p>Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?</p> | Not applicable for my use |
| <p>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?</p> | Not applicable for my use |
| <p>Changes in efficiency of spectrum use</p> <p>Question 21: What technologies are currently available or are being developed which can improve wireless video spectrum efficiency in the future?</p> | Not applicable for my use |
| <p>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?</p> | Not applicable for my use |
| <p>Question 23: What types of video demand could realistically be supported by private (for example 5G) networks?</p> | Not applicable for my use |

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| Question 24: What changes to working practices and spectrum planning could improve video spectrum efficiency in the future? | Not applicable for my use |
| 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? | Not applicable for my use |

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| <p>Other comments</p> <p>Question 26: Do you have any other comments or views on the issues raised in this document?</p> | <p>I use radio microphones and IEM systems almost every day of my professional life since the 1980s. Their use continues to grow as they become more reliable, even when the freedom provided by the use of wireless is just a courtesy to presenters who broadcast while seated. My main area of expertise is sound mixing in broadcast TV, but I have also advised for drama school productions. I have noticed that even the simplest of stage productions use radio microphones. In my "day job" I advise TV facility providers to use fixed site licenses for the additional security it provides but I know that they do use shared licenses for budget reasons. I discuss the issue if I think the use of channel 38 might be oversubscribed at a particular event. Technology have allowed us to use current available spectrum in a more efficient manner and if we are restricted further with regards spectrum, then we might be able to squeeze the RF lemon a little further. I fear that we might be coming close to the point where squeezing some more will not produce the required amount of juice. I might be wrong, manufacturers will only do R&D on this if there is a commercial reason to do so. After the last spectrum changes, it took several years for effective products to come to market which use spectrum in a more efficient manner.</p> <p>Wireless microphones and IEM systems are being used now, and will continue to be used to the benefit of the British public. Alternative use for this spectrum is for commercial reasons, for profit, benefitting foreign based technology companies. I do not feel we should give this valuable and limited resource to foreign corporations, it should remain in the hands of and must benefit the British people.</p> |

Please tell us how you came across about this consultation.

- Email from Ofcom
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- 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 - Attended a meeting of interested parties in the broadcast industry.

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