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 It seems to work fine as it is so I've no further comment to make at this time.
Section 4 – PMSE historic trends **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?	Confidential? – N No further comments
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?	Confidential? – N No Further Comments

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 We have seen a noticeable increase in the demand for hire of wireless microphones in the past 10 years and this demand continues to grow to this day. Even amateur drama groups as well as schools are requiring on average double the amount of frequencies compared to 10 years ago. We've experienced no decline whatsoever. This sector does not apply to us so I can't comment.
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 Everybody these days requires and "expects" wireless microphones. Audiences just expect the use of microphones and most presenters/performers require the freedom to move without involving cabling. The use of wireless IEM's is often preferred these days.

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 Yes most definitely in my opinion.
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 We only make use at this time of PMSE frequencies in Ch38 and Ch65 which is nearly always enough for our requirements however on much bigger events it's not uncommon to need close to or even more than 100 channels of radio mics these days.
Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?	Confidential? – N DME people just need to be made aware or the available frequencies. DECT requires the seemingly mandatory delay removed. Up to around 20ms of delay is unusable for radio mics in a lot of instances and for wireless IEM's that sort of delay is out of the question.
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 Some VHF is good but UHF is the best. The GHz band really isn't that great due to the sudden changes in RF signal strength. It can go from full RF to dropout and back to full suddenly and without any warning unless a complex receiving antenna is in place.
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 High latency is an absolute NO for me and just about anyone reading this form however that's a worthless point of view without having access to enough available spectrum and the stability of those allocated frequencies which is absolutely critical.

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 The use of the duplex gap (823-832MHz) has been a real bonus to us and we find those frequencies to be pretty solid all over the UK mainland. With Ch38 (606.5-613.5MHz) replacing Ch69 that's pretty much like for like and for 99% of our work this is fine however as previously stated much bigger events then those we do can easily need 5x the amount of available frequencies and again as previously mentioned the number of usable frequencies required is only growing.
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 While the technology is getting better especially now digital radio mic and IEM equipment has become available it has as yet not given the users of this type of equipment many extra channels possibly with the exception of the very top of the range equipment which is simply an unaffordable option for most hire companies (and schools/theatres etc) at this time.
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 Apart from cost (as mentioned in the previous answer) we also need to wait for the very latest technologies to improve even further to see if we can compact more usable channels within the allocated spectrum in this world of ever increasing demand for spectrum from "everyone".
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 That's for those really clever people who design this type of equipment and they need advanced microchips to enable such designs. Only then can we get the required efficiencies we'd love to have. We are maxed out right now based on the available spectrum. We definitely would like more availability (definitely NOT less).
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	Confidential? – N I don't think the system is broken. There is a lot more RF around these days and again sorry for sounding like a

Question	Your response
largest events and venues? What could industry do and what could Ofcom do to facilitate those efficiencies?	broken record when it comes to things I've already mentioned… but… not only does the technology of tomorrow need to allow closer channel spacings it also has to cope with way more potential interference from other RF sources. There's not much wrong with where we are. We just need to wait for the technology to advance further.
## 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? – N This isn't what we do so I'll not comment on the video side of wireless spectrum use and leave it to others.
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? – N See answer to Q16.

Question	Your response
c) the bandwidth used at horse racing fixtures and other major sporting events?	
Potential news 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? – N See answer to Q16.
Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?	Confidential? – N See answer to Q16
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? – N See answer to Q16
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? – N See answer to Q16
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? – N See answer to Q16
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, particularly in the use of wireless microphones and IEMs at the largest events and venues?	Confidential? – N See answer to Q16
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? – N See answer to Q16

Question	Your response
Other comments **Question 26:** Do you have any other comments or views on the issues raised in this document?	Confidential? – N I think we all appreciate the work Ofcom do and the headaches you must have that are created for you by all of us wanting "our bit of the available spectrum"? While it could be argued by some that PMSE related requirements aren't an absolutely essential part of modern life I would just say that all humans need (yes need) some down time. While mobile communication and data etc are an everyday essential part of modern life we all take for granted I feel it is absolutely critical that all people can have the opportunity to leave the home and office behind and go out to an event be it an outdoor concert or an indoor theatre performance or if these aren't their thing perhaps one of many sporting events etc?. We humans are a "herd species" and we need to mix with others and find things we have in common and if nothing else have a night out or weekend away as much as anything for our mental health! It all goes quickly wrong if we become loners or worse still become reclusive. Without mixing with others at live events of some kind we could just basically eat, work, sleep, repeat. Our downtime (for the vast majority of people) is when we get out to see real people performing live in front of us and those of us working in this entertainment industry require our "RF tools of the trade" to enable those who come to watch and listen to be able to see and hear. This applies not only to concerts and theatre performances but also sporting events which are broadcast around the world. From the stage performances requiring perhaps 100+ channels of RF at any one time to the referees on the field of play who explain to the crowd the decisions they are making and why they "ALL" require wireless mics and IEM's to make this happen on a daily basis.

Please tell us how you came across about this consultation.

- X Email from Ofcom
- X Saw it on social media
- X 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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