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 All seems to work well. Not always easy to speak to get hold of someone on the phone
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 You talk about IEMs for Live Events, but IEMs are also vital in TV, film and commercials. A very large amount of people on set want to be able to hear what is being recorded and cannot be on set for a multitude of reasons
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? – Y / N

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? – Y / N
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 The UK is already a major player in the worlds of film, drama, commercials and large reality shows that require many frequencies to be coordinated. But an increase in these productions being made in the UK will inevitably mean more coordinated frequencies are needed.

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? – Y / N
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 I am not sure the DME band is reliable enough for use in professional productions. Especially in the documentary world where my main experiences are. The range just isn't there.
Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?	Confidential? N DME could maybe be useful for IEMs where quality isn't as critical as body worn radio mics
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? – Y / N
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 Reliability is the most important factor for kit. Same goes for reliable frequencies.

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 Biggest change is being able to group more mics together without intermodulation. The tech has come a long way in the las 10 years.
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? – Y / N
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 I would say price of the equipment. Massive financial investment would be needed.
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? – Y / N
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 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? – 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, particularly in the use of wireless microphones and IEMs at the largest events and venues?	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? N

Most of my work is factual location work. I use up to 14 Wisycom radio mics, up to 10 Sennheiser/LD Systems IEMs and 10 x Timecode Systems/Atmos timecode units. All this equipment has taken years of investment to accumulate and relies on the 470 – 694MHz spectrum.

As a location sound recordist the most important kit is your radio mics. Gone are the days of a couple of radios and a boom with the sound mixer plugged into camera. Even supposedly straightforward jobs will now expect 4-5 radio mics on contributors, a wireless stereo link to main camera, and multiple IEMs for the director, producer, AP etc. So even a simple job can easily have 8 frequencies to get to work together.

It is critical that all these frequencies work perfectly especially the contributor radio mics. Working in docs and reality you very rarely get to do anything twice, it has to work first time every time. You are working with real people experiencing / capturing what is happening in real time.

Frequency management is an invisible but vital part of this. If you cannot rely on the frequencies, it makes the job impossible.

Ch38 is essential for a huge number of crews everyday in the UK. Knowing you turn up almost anywhere and have usable frequencies keeps TV productions from grinding to a halt.

On the bigger shows that quite often have multiple contribs in one place (Traitors/Bake Off et al) the site specific licenses are equally crucial. I have used them through the production companies many times.

What is key for the production of TV/film in the UK is clear usable frequencies that are flexible. An entire production will grind to a halt instantly if lead actors/presenters/contributors cannot be wired for sound. 100 million block busters, £10k branded shoots and everything in between depend on working crystal clear radio mics.

I have been lucky enough to work all over the world on documentaries and the countries that have sold off large parts of their 470 – 800MHz spectrum are a nightmare

Question	Your response
	for productions and mean a lot of time and money is wasted finding and coordinating frequencies. If there are sell offs in the spectrum that means existing kit cannot fulfil the tasks required that would mean re-cordists such as myself will need to invest tens of thou-sands of pounds in new equipment. Just my Wisycom kit would be over £20k to replace and then IEMs and time-code on top of that.

Please tell us how you came across about this consultation.

- ☐ 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)

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