

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, turnaround times, and event coordination. Do you think the current approach works well? How could we improve it?</p>	<p>Confidential? – N</p> <p>I would like to see more flexibility in booking licences. The inability to amend or cancel licences is very limiting and also frustrating at times, and I believe (through having conversations with peers) that some users of wireless equipment occasionally do not purchase licences for this exact reason. It therefore seems to me that Ofcom actually loses revenue due to this rigidity of short-term PMSE licensing.</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>Confidential? – Y / N</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>Confidential? – Y / N</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? 	<p>Confidential? – Y / N</p>
<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)? 	<p>Confidential? – Y / N</p>

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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? – Y / N
Question 8: What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?	Confidential? – Y / 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? – 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? – Y / N
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	Confidential? – N Advances in RF technology such as high density digital RF systems have allowed for more efficient band usage when required. However, there are limits to the laws of physics and so we must heed caution against using these

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<p>the increased use of wireless microphones and IEMs at the largest events and venues in the context of reduced UHF spectrum availability?</p>	<p>technological advances as justification for the continuous squeezing of available spectrum to PMSE users.</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>Confidential? – Y / N</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>Confidential? – N</p> <p>As RF technology used in live music & entertainment is moving towards high density digital transmissions, we are being pushed to maximise band utilisation. However, as well as having a finite channel capacity, this digital technology also has a noticeable difference in the audio quality: Analogue companding & transmission in analogue systems has an effect on the audio that is not present in digital transmission. Some users believe this to be a negative difference, others positive. There are other features and benefits to this older technology, not least being the consideration of affordability to small-scale users. Shure Axient Digital, Sennheiser Spectera, Wisycom Symphony are financially out of reach unless you are an established rental company.</p> <p>As an example case, I work for an artist who has tried various digital radio mics and IEM systems, and directly compared them to existing analogue systems. To his ears, the difference is night and day, and I agree there's a difference in audio quality that you cannot replicate with a digital system; So much so that he now will not use those digital radio systems and as a direct result of this issue, we continue to travel everywhere with analogue equipment which only operates between 554 - 698MHz.</p> <p>For these reasons, any further reduction of available PMSE bands must therefore allow for significant usable bandwidth for what one might label as "legacy equipment", in the same way that many people still want to drive vintage petrol cars in a world of Teslas, or play their guitar through a VOX AC30 in a world of digital</p>

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	modelling amps. Better still would be no further reduction in available bandwidth.
<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>	Confidential? – Y / N
<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 Ofcom do to facilitate those efficiencies?</p>	Confidential? – Y / N
<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? 	Confidential? – Y / N

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<p>c) the slow growth or decline in bandwidth used at horse racing fixtures?</p>	
<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? c) the bandwidth used at horse racing fixtures and other major sporting events? 	<p>Confidential? – Y / N</p>
<p>Potential news 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>	<p>Confidential? – Y / N</p>
<p>Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?</p>	<p>Confidential? – Y / N</p>
<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>	<p>Confidential? – Y / N</p>

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<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>	Confidential? – Y / N
<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>	Confidential? – Y / N
<p>Question 23: What types of video demand could realistically be supported by private (for example 5G) networks?</p>	Confidential? – Y / N
<p>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?</p>	Confidential? – Y / N
<p>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?</p>	Confidential? – Y / N
<p>Other comments</p> <p>Question 26: Do you have any other comments or views on the issues raised in this document?</p>	<p>Confidential? – N</p> <p>450 - 698MHz must be protected for long term use as PMSE bandwidth. Whilst modern technology advances are exciting and useful for improving band efficiency, there is a huge amount of RF equipment still in use daily which still has a useful life of many years, if not decades. Some of that equipment is actually brand new and users like myself have only recently invested large amounts of</p>

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	<p>money in this technology. Personally, I own approximately £60k of radio mics & IEM equipment, which as a sole trader, I cannot afford for it to become obsolete in just a few years through removal of PMSE bandwidth.</p> <p>So perhaps this is beyond the scope of this particular consultation, but having been recently pushed out of the 800-900Mhz band and then 700-800Mhz band, PMSE users are rightly extremely nervous about being squeezed further.</p>

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.