

## Your response

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<p><b>Section 3 –Spectrum use by the PMSE sector in the UK</b></p> <p><b>Question 1:</b> 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>The coordination system generally works and prevents interference.</p> <p>Improvements that would help:</p> <ul style="list-style-type: none"> <li>• Faster handling of last-minute changes at live events.</li> <li>• Presets option.</li> <li>• Clear operational guidance if AFC sharing affects parts of 7 GHz in urban areas.</li> </ul> <p>For large national events, a single named coordination contact would help during build and live days.</p> <p>Confidential: No</p>
<p><b>Section 4 – PMSE historic trends</b></p> <p><b>Question 2:</b> 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>No detailed comment (not my main area).</p> <p>Confidential: No</p>
<p><b>Question 3:</b> 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>For wireless video, growth is driven by:</p> <ul style="list-style-type: none"> <li>• More cameras.</li> <li>• More backup paths.</li> <li>• More return feeds.</li> <li>• Higher reliability expectations.</li> <li>• More RF positions inside venues.</li> </ul> <p>It would help to distinguish:</p> <ul style="list-style-type: none"> <li>• COFDM camera links.</li> <li>• Low latency IP links.</li> <li>• Private 5G network links.</li> </ul> <p>They are not interchangeable operationally.</p>

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<p><b>Section 5 – Future trends and opportunities</b></p> <p><b>Wireless audio</b></p> <p><b>Drivers of demand</b></p> <p><b>Question 4:</b> What factors have driven changes in the demand for audio PMSE applications, specifically for:</p> <ul style="list-style-type: none"> <li>a) the increased use of coordinated wireless microphones and IEMs, particularly the peak number of simultaneous assignments used at the largest events?</li> <li>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?</li> <li>c) the declines in talkback, fixed audio links and ADS licences?</li> </ul>	<p>Likely:</p> <ul style="list-style-type: none"> <li>• Larger productions.</li> <li>• More IEM usage.</li> <li>• More complex stage layouts</li> </ul> <p>Confidential: No</p>
<p><b>Question 5:</b> 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"> <li>a) coordinated wireless microphones and IEMs, particularly the peak number of simultaneous assignments used at the largest events?</li> </ul>	<p>Demand at major events will likely continue increasing.</p> <p>If UHF access reduces in future, pressure will shift to alternative bands such as DME or others, but only if equipment and coordination are practical.</p> <p>Confidential: No</p>

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<p>b) national wireless microphone licences (UHF channel 38 and VHF)?</p> <p>c) talkback, fixed audio links and ADS licences?</p>	
<p><b>Question 6:</b> Do you agree that, given the trends, we are right to focus on wireless microphones/IEMs?</p>	<p>No. Wireless video also needs strong consideration because video failures are highly visible and affect national broadcasts.</p> <p>Confidential: No</p>
<p><b>Changes in the take-up of bands already available</b></p> <p><b>Question 7:</b> 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>DME take-up is limited by:</p> <ul style="list-style-type: none"> <li>• Equipment ecosystem.</li> <li>• Coordination complexity.</li> <li>• Uncertainty about aviation protection.</li> <li>• Operational unfamiliarity.</li> </ul> <p>Users prefer bands that are predictable and widely supported.</p> <p>Confidential: No</p>
<p><b>Question 8:</b> What actions could enable greater take-up of the DME, DECT and licence exempt bands in the future?</p>	<p>Ofcom could:</p> <ul style="list-style-type: none"> <li>• Provide very simple practical guidance.</li> <li>• Publish real event case studies.</li> <li>• Keep coordination predictable.</li> <li>• Give long-term clarity so manufacturers invest.</li> </ul> <p>Confidential: No</p>

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<p><b>Changes in spectrum availability</b></p> <p><b>Question 9:</b> Which potential additional bands might be suitable for wireless audio applications, particularly microphones and IEMs at the largest events and venues?</p>	<p>Any new band must have:</p> <ul style="list-style-type: none"> <li>• Clear protection rules.</li> <li>• National consistency.</li> <li>• Realistic equipment support.</li> </ul> <p>Confidential: No</p>
<p><b>Question 10:</b> 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>Latency and resilience strongly affect spectrum needs.</p> <p>Some applications can tolerate delay. Others (live mic, talkback) cannot.</p> <p>Confidential: No</p>
<p><b>Changes in efficiency of spectrum use</b></p> <p><b>Question 11:</b> 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>Better coordination, improved digital systems, and tighter event planning.</p> <p>Confidential: No</p>
<p><b>Question 12:</b> 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>Wider tuning equipment.</p> <p>More efficient digital modulation.</p> <p>Better coordination tools.</p> <p>Confidential: No</p>
<p><b>Question 13:</b> 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</p>	<p>Ofcom can help by giving long-term policy clarity.</p> <p>Confidential: No</p>

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Ofcom do to facilitate greater use of those technologies?	
<p><b>Question 14:</b> 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>Earlier planning.</p> <p>Better RF discipline on site.</p> <p>Clear communication between teams.</p> <p>Confidential: No</p>
<p><b>Question 15:</b> 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>	<p>Time pressure and limited RF expertise at some events.</p> <p>Training and clearer coordination processes would help.</p> <p>Confidential: No</p>

Question	Your response
<p><b>Wireless video</b></p> <p><b>Drivers of demand</b></p> <p><b>Question 16:</b> 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"> <li>a) the increased bandwidth required for the largest sporting events such as Formula 1 at Silverstone and The Open Championship?</li> <li>b) the bandwidth required for nationally important state events such as The Coronation?</li> <li>c) the slow growth or decline in bandwidth used at horse racing fixtures?</li> </ul>	<p>From an RF video perspective:</p> <ul style="list-style-type: none"> <li>• More roaming cameras.</li> <li>• More specialty angles.</li> <li>• More backup paths.</li> <li>• More return vision.</li> <li>• Higher quality expectations.</li> <li>• Greater resilience planning.</li> </ul> <p>Video links are increasingly duplicated for risk reduction.</p> <p>Confidential: No</p>
<p><b>Question 17:</b> 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"> <li>a) the bandwidth required for the largest sporting events like Formula 1 at Silverstone and The Open Championship?</li> <li>b) the bandwidth required for nationally important state events such as The Coronation?</li> <li>c) the bandwidth used at horse racing fixtures and other major sporting events?</li> </ul>	<p>Demand will likely grow due to:</p> <ul style="list-style-type: none"> <li>• More content platforms.</li> <li>• More camera angles.</li> <li>• More redundancy planning.</li> </ul> <p>Demand may reduce only if reliable alternative infrastructure is available.</p> <p>Confidential: No</p>

Question	Your response
<p><b>Potential news bands</b></p> <p><b>Question 18:</b> 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>7 GHz is attractive because:</p> <ul style="list-style-type: none"> <li>• Good capacity.</li> <li>• Mature equipment.</li> <li>• Well understood coordination.</li> </ul> <p>If Wi-Fi or mobile expands close to upper 6 GHz and overlaps near 7.110–7.125 GHz, flexibility in dense urban areas could reduce.</p> <p>AFC sharing must be proven reliable under real event conditions.</p> <p>Confidential: No</p>
<p><b>Question 19:</b> Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?</p>	<p>Ofcom could consider:</p> <p>A nationally harmonised, bookable 5G spectrum block reserved for PMSE during licensed event periods.</p> <p>This could operate under short-term local licensing and provide guaranteed availability.</p> <p>This would:</p> <ul style="list-style-type: none"> <li>• Reduce pressure on 2 GHz and 7 GHz.</li> <li>• Support return feeds and non-critical video.</li> <li>• Provide backup resilience.</li> </ul> <p>It should not depend fully on commercial mobile operator traffic conditions.</p> <p>Confidential: No</p>
<p><b>Question 20:</b> 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>Live broadcast requires:</p> <ul style="list-style-type: none"> <li>• High resilience.</li> <li>• Predictable latency.</li> <li>• Operational simplicity.</li> </ul> <p>Not all video use cases require the same performance.</p> <p>Confidential: No</p>

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<p><b>Changes in efficiency of spectrum use</b></p> <p><b>Question 21:</b> What technologies are currently available or are being developed which can improve wireless video spectrum efficiency in the future?</p>	<p>Carefully engineered private 5G networks.</p> <p>Confidential: No</p>
<p><b>Question 22:</b> 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>	<ul style="list-style-type: none"> <li>• Cost of replacing large equipment fleets.</li> <li>• Interoperability between vendors.</li> <li>• Risk of unproven technology at major events.</li> <li>• Uncertainty about future access near 7 GHz edge.</li> </ul> <p>Clear long-term policy direction would reduce investment risk.</p> <p>Confidential: No</p>
<p><b>Question 23:</b> What types of video demand could realistically be supported by private (for example 5G) networks?</p>	<p>Private 5G networks could support:</p> <ul style="list-style-type: none"> <li>• Roaming cameras (where latency tolerance allows).</li> <li>• Backstage feeds.</li> <li>• Return vision.</li> <li>• Non-critical links.</li> <li>• Backup paths.</li> </ul> <p>For major broadcast cameras, traditional 2 GHz and 7 GHz COFDM remain essential.</p> <p>Ofcom could consider enabling a bookable PMSE 5G spectrum block with guaranteed availability during licensed events.</p> <p>This would allow:</p> <ul style="list-style-type: none"> <li>• Predictable planning.</li> <li>• Reduced congestion in traditional PMSE bands.</li> <li>• More efficient spectrum use overall.</li> </ul> <p>Confidential: No</p>

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<p><b>Question 24:</b> 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>	<ul style="list-style-type: none"> <li>• Shared RF planning between rights holders.</li> <li>• Standardised RF discipline rules at venues.</li> <li>• Structured process for last-minute additions.</li> </ul> <p>Confidential: No</p>
<p><b>Question 25:</b> 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>	<p>Ofcom could support coordination meetings for the largest events.</p> <p>Confidential: No</p>
<p><b>Other comments</b></p> <p><b>Question 26:</b> Do you have any other comments or views on the issues raised in this document?</p>	<ul style="list-style-type: none"> <li>• Protection of practical 7 GHz access in dense urban areas is important.</li> <li>• AFC or sharing models must work reliably during major live events.</li> <li>• PMSE needs long-term certainty to invest in new equipment.</li> <li>• A nationally harmonised, bookable 5G spectrum option for PMSE could reduce future pressure and show the sector is willing to adopt efficient technologies.</li> </ul> <p>Confidential: No</p>

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