BBC response to Ofcom Call for Input: Sector Spectrum Review - Programme Making and Special Events (PMSE)

14 April 2026

Call for Input: Sector Spectrum Review

Programme Making and Special Events (PMSE)

BBC Response

The BBC welcomes Ofcom's decision to undertake a sector review of PMSE at this time.

The BBC agrees with Ofcom that PMSE plays a crucial role across a range of events from major national occasions and state ceremonies to smaller everyday use at a community level.

All of these uses underpin social and cultural cohesion across the UK, from West End theatres and touring productions to live music, sporting events, places of worship and community gatherings. PMSE enables the creative industries that the Government has identified as a key driver of economic growth[1], and the live events sector that contributes billions to the UK economy each year. Overall, the Government estimates that the creative industries contribute £124 billion to the UK economy. The BBC's own experience illustrates the scale of this dependence: our analysis shows that for every £1 the BBC directly adds to the economy, £3.55 is generated in the wider UK economy, with 67% of this contribution landing directly in the creative industries.[2] All of this activity relies on reliable access to PMSE spectrum.

The BBC is one of the largest users of PMSE in the UK, whether directly by the BBC public service, through our commercial subsidiaries, or via third-party suppliers providing content or technical services to the BBC. This submission is made on behalf of the BBC Group and reflects the experience of the Public Service, BBC Studios our production company and BBC Studioworks which provides studio space and related facilities.

This Call for Input identifies (correctly in our view) a continuing increase in demand for both audio and video PMSE spectrum, while several factors, including the proposed scaling back of DTT usage of UHF spectrum, have the potential to reduce spectrum available for PMSE.

The BBC is concerned that the increase in demand for PMSE coupled with the pressures on spectrum availability risk causing a spectrum "crunch" in the next few years. The BBC

[1] UK Government The UK's Modern Industrial Strategy – Creative Industries Sector Plan https://assets.publishing.service.gov.uk/media/68920e22dc6688ed50878479/industrial_strategy_creative_industries_sector_plan_accessible.pdf

[2] BBC analysis, prepared with assistance of EY

has taken the opportunity of using Question 26 to express more fully its concerns about the drivers that may reduce spectrum availability for PMSE .

Amongst those factors which could have an impact on PMSE spectrum supply are:

- The future of terrestrial television distribution, which is under active review by government, with Ofcom's own Future of TV Distribution report setting out scenarios that include a managed reduction or cessation of DTT services during the 2030s. In spring 2026, the government launched a review of the radio industry, which will consider issues of distribution[3]. The outcome of these processes may reshape the UHF spectrum landscape on which much of audio PMSE currently depends. This response is therefore informed not only by the BBC's experience as one of the UK's largest PMSE users, but also by our perspective as a public service media organisation, as we respond to audiences' transitioning away from broadcast platforms towards IP distribution.
- Many of the key frequency bands utilised by video and audio PMSE in the UK are under consideration for allocation to new services at forthcoming World Radiocommunications Conferences, in 2027 and 2031. In reaching conclusions about future spectrum for PMSE, the BBC believes that Ofcom needs to consider those very relevant factors which could have a significant impact on PMSE spectrum availability. In particular, the combined impact of WRC-27 agenda items 1.7 (affecting the 7 GHz range) and 1.12, 1.13 and 1.14 (affecting the 2 GHz bands) seems not to have been considered at all. Our response to Question 26 in this Call for Input sets these concerns out in more detail.

The factors above, if not properly anticipated and managed, could seriously impact the viability of PMSE and thus undermine the ability of the BBC and other UK media, creative and cultural organisations to provide the public and societal value that they do. The BBC does not take an *a priori* position of opposition to any of the factors above; indeed, it has been a significant supporter of the need to review the future of DTT in the context of a wider examination of TV distribution in the UK. But the BBC believes that Ofcom needs to consider their impact on the broader question of PMSE spectrum supply against the expected increase in demand.

The BBC believes that greater international recognition of PMSE would help with efforts at harmonisation and improve economies of scale. This could be brought about by efforts to improve the status of PMSE at the ITU, to help distinguish it from other applications of the mobile service. The BBC recognises the efforts already made by Ofcom to achieve wider harmonisation of the aeronautical (DME) band for PMSE. It

[3] UK Government: Ministers kick off review to safeguard radio's future (February 2026) https://www.gov.uk/government/news/ministers-kick-off-review-to-safeguard-radios-future

believes that the UK should lead international efforts to bring greater recognition to PMSE and the important benefits it brings society. This will become particularly important as pressures on the supply of audio and video PMSE spectrum increase.

The BBC notes that to a large extent, the Call for Input focuses on the spectrum demand of the largest events only. Although these large events do drive the maximum amount of spectrum which may be needed for PMSE, they are also the events which can most easily be managed and coordinated with bespoke spectrum management regimens. There are two other situations that Ofcom should consider:

Firstly, locations where large amounts of PMSE spectrum are required on a long-term basis (for example, large productions centres such as the Salford Quays complex) need to be very carefully considered in the event of any further reductions in spectrum availability. The Government's 2025 Creative Industries Sector Plan[4] shows significant interest in the economic growth potential arising from the establishment of more such TV/film production hubs, so focussing on spectrum availability in the long-term for high-demand locations will be critical. The Call for Input makes no reference to location-based, rather than event-based, peaks in demand.

Secondly, the impact of reduced spectrum availability on small and medium PMSE users must also be considered. These users - including ad hoc outside broadcast and newsgathering operations - depend on ready access to uncontested spectrum at short notice and in unpredictable locations.

The BBC does not expect the PMSE spectrum landscape to remain unchanged forever. But it does need to be able to plan, invest, and operate with confidence that reliable, interference-free spectrum access will continue to be made available through whatever transitions lie ahead.

The BBC has some concerns about how Ofcom currently manages some aspects of PMSE spectrum (for example, long lead times on shared access licences and on-the-ground coordination at major events) and therefore calls on Ofcom to improve its approach to managing spectrum for this important sector, on which we give further suggestions in our response to Question 26. Factoring in the implications of several forthcoming policy and regulatory decisions to the future sustainability of PMSE operations is key to charting a viable path forwards.

[4] UK Government The UK's Modern Industrial Strategy – Creative Industries Sector Plan https://assets.publishing.service.gov.uk/media/68920e22dc6688ed50878479/industrial_strategy_creative_industries_sector_plan_accessible.pdf

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, turnaround times, and event coordination. Do you think the current approach works well? How could we improve it?

The BBC notes that different processes are used for events of different scale. The hands-on approach adopted for major events generally works well, though we have concerns that Ofcom has recently been deploying fewer staff on the ground to resolve issues requiring immediate attention. We are concerned that this could be read as Ofcom having less commitment to the more urgent short-term requirements of programme makers in comparison to other licensing sectors.

Manual applications and online booking remain highly effective despite no significant updates to the website for 20 years. However, a major outage at the end of 2024 took down online bookings completely for several weeks. There were no proactive notifications at the start of the outage and only belated updates on its resolution. The BBC would urge Ofcom to undertake a review of these systems, particularly with regard to resilience.

A significant proportion of the technical and licensing information on the Ofcom website remains outdated and in some cases inaccurate, particularly for video PMSE. Some licence documentation appears not to have been updated recently, still referencing the 700 MHz clearance which completed in 2020 and containing outdated information on the 960–1164 MHz band.

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?

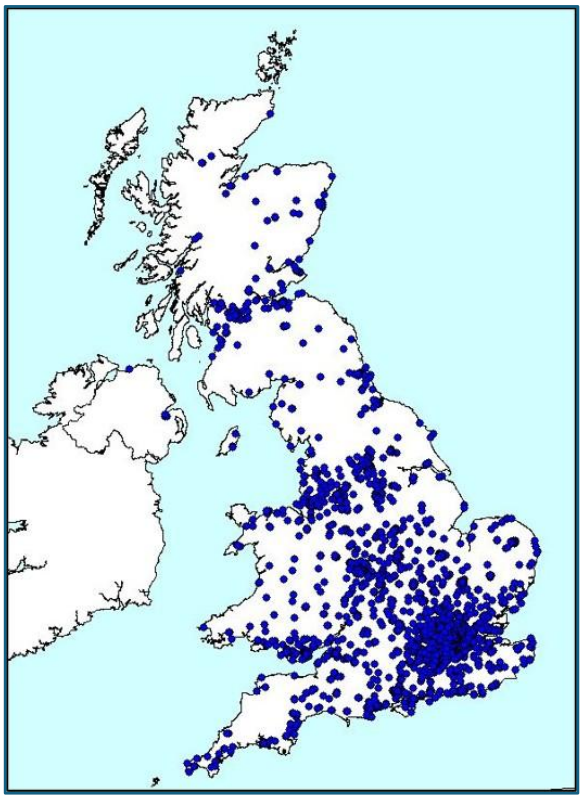
The analysis of PMSE historic trends is thorough and fair in its interpretation of the data, and matches other analysis and anecdotal evidence over the period. Discounting 2020 and 2021 is entirely reasonable given the steady rise in coordinated assignments before and after Covid.

The focus on wireless audio is appropriate given the clear increases in demand over the period in question.

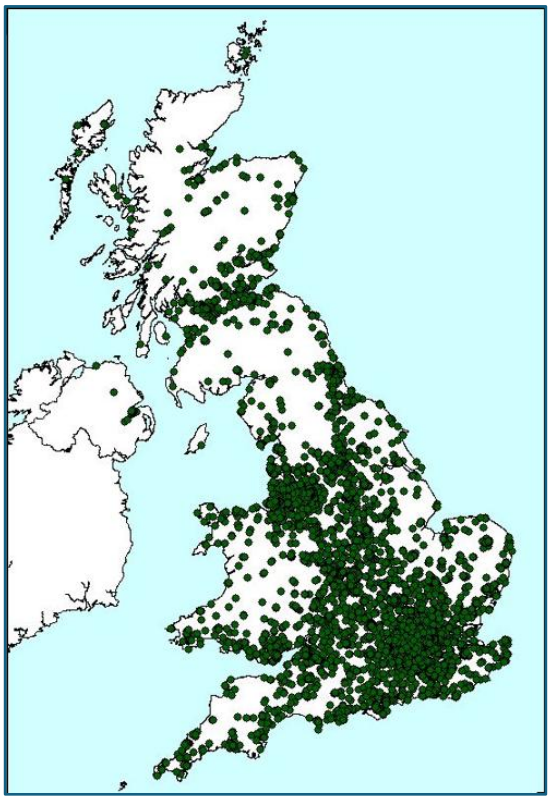
Whilst for block assignments an assumption of 10 spot frequencies within an 8 MHz block and four spot frequencies in 4 MHz is used, this is a conservative figure for wireless

microphones given that much higher densities are routinely achievable, and perhaps an overestimate for analogue FM IEMs. For the subsequent data released by Ofcom, similarly, there is no ability to differentiate between wireless microphone and IEM assignments. One additional insight, however, relates to the duration of assignments: around two thirds are for up to 48 hours, rising to 80% up to a week. Around 12% are annual indoor assignments, with the remainder falling in between. The majority of licensed use is for temporary short-duration events, but 12% of total assignments are permanently licensed and in constant use.

The figures below show the wide geographical spread of wireless microphone and IEM assignments differentiating between those lasting up to a week and those longer than seven days, which are generally indoor permanent assignments. It shows ongoing assignments, more likely in urban areas, whilst short term assignments, often outdoors, dominate and are geographically more widespread, assigned at short notice and for short durations.



2018-2024 Assignments of over 7 days



2018-2024 Assignments of under 7 days

source: BBC analysis of Ofcom data release, February 2026

The overall increase in coordinated frequency assignments by 22.5%, from 300,000 in 2018 to 370,000 in 2024, underlines the value placed on access to interference-free

spectrum by the PMSE sector and the importance of the coordination work carried out by Ofcom on its behalf. While the highest demand for audio PMSE assignments is concentrated at a small number of large events, these are typically the highest-profile occasions and play a significant part in the cultural life of the nation. Currently, and for the immediate future, only the UHF band supplemented by the DME band can support the highest levels of audio PMSE demand.

Glastonbury is considered thoroughly in the Call for Input as a peak in wireless audio demand, and the assignment count reportedly increased substantially again in 2025. Whilst a high density can be achieved - a credit to those who carry out the coordination on site - Glastonbury and other outdoor festivals are very much the exception. The same density of use is not achievable in other high-demand scenarios. At Glastonbury, high density is only achieved through a combination of time diversity and substantial physical separation between stages: assignments are used only for brief sets and then reused. It is the distances of hundreds of metres between stages that allow such close frequency operation to work - an option not available at other high-demand locations, as explored below.

Table 8 in the Call for Input presents peak-day demand for five events, but only one - the ExCeL Centre - is indoor and arguably represents the highest density of use by area. A more representative example of sustained high demand would be large film studios and TV production centres, where multiple production stages operate simultaneously in close proximity. BBC Studioworks at Elstree already relies upon the full UHF and DME bands to meet routine demand across its stages, with little opportunity to increase density without compromising productions. The assignment count may not match Glastonbury's, but supporting over 200 simultaneous assignments in a smaller area already overwhelms the current provision of UHF and DME spectrum. Musical theatre is another significant example, with West End productions often requiring over 100 simultaneous assignments in compact spaces, in close proximity to other theatres with similar demand.

The increases in spectral efficiency from modern digitally modulated equipment have already been fully exploited. Rather than the assumption of ten assignments per 8 MHz block, it is routine to assign 23 or more radio microphones in an 8 MHz block, and this has been the case in BBC News studios for some years. As a result, the claimed advantages of WMAS systems for radio microphones at greater densities appear optimistic and remain unproven at equivalent quality and latency. There may be greater opportunities to increase density for IEMs, moving away from current analogue FM equipment and inefficient intermodulation-free plans, but again this remains unproven at the quality and latency levels required by high-end performers.

Assignments for fixed audio links and audio distribution systems continue to decline as alternative technologies and connectivity solutions supplant these legacy approaches. They continue without issue while their spectrum ranges remain available and uncontended.

For data and telemetry, the picture is more nuanced. Data assignments are used alongside wireless video as a cable-free return path for camera control and other reverse signals. With increasing numbers of wireless video deployments, these data assignments remain crucial, but new bidirectional technology solutions - including mesh technologies and private 5G systems - are already in place and may be masking greater use of data within wireless video assignments.

UHF talkback demand shows a slight reduction year on year, but its use and the requirement for the spectrum remain vital. Alternative means of production talkback have grown over the period 2018 to 2024, notably DECT in the 1880–1900 MHz band. Products from manufacturers such as ClearCom and Riedel offer increased configuration options including selective calling and call groups. Originally used primarily for indoor studio talkback, DECT is increasingly deployed outdoors at outside broadcasts, replacing some traditional UHF systems. While DECT suits many short-range purposes including pitch side use, it does not replace UHF for more demanding applications over greater ranges, such as golf coverage.

Wireless audio - Channel 38 and VHF

The figures for UHF Channel 38 licences have reduced only very slightly over the period, but Channel 38 remains the only uncoordinated licence product for multiple microphones and IEMs. Its continued use reflects steady demand from the cultural sector, where it is highly valued by theatres, particularly for touring shows and other performance spaces.

The slight reduction may be related to the growth in Bluetooth and Wi-Fi options, which have improved in performance in recent years, but these do not provide the number of channels available through Channel 38 or the reliability required for live performance. VHF shared licence numbers reduce year on year, but volumes are small and most likely relate to legacy equipment being replaced at end of life.

Spectrum Coordination

The coordination and management of assignments at Glastonbury provides a template for maximising spectrum use for wireless audio at all high-demand occasions. Coordinators need every degree of freedom and stronger influence, with greater support from organisers and venue owners. Onsite coordination of spectrum at Glastonbury only

began when the organisers acknowledged coordination issues and started to insist on all acts coordinating through Ofcom's PMSE contractor. This is close to the US model, where sporting venues have a dedicated spectrum coordinator. The same approach applies in the UK to the biggest national and international sporting events, where Ofcom traditionally suspends first-come-first-served spectrum applications for around 20 major events each year, taking back management of spectrum for those occasions. As spectrum demand and contention increase, there is value in promoting more onsite spectrum coordination.

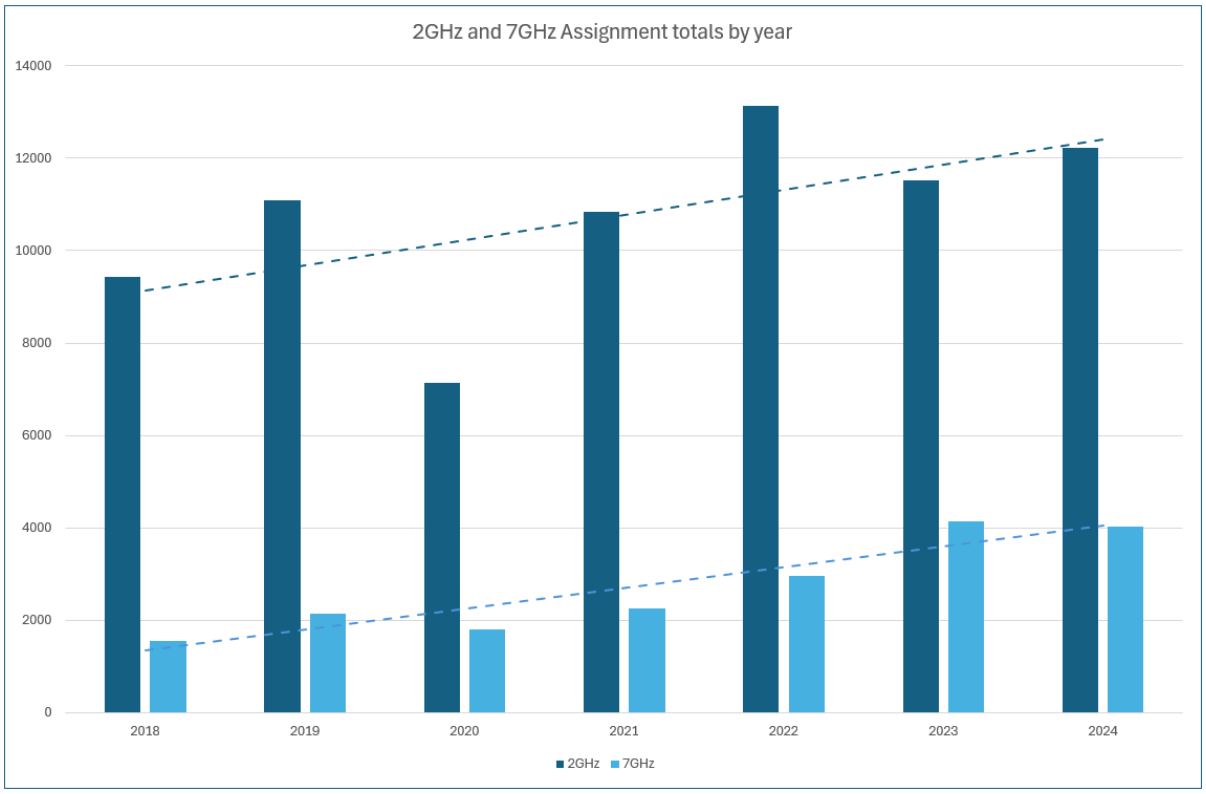
Question 3: Do you have any comments on how we have analysed and characterised wireless video demand, or suggestions for alternative ways of characterising wireless video demand?

The analysis showing highest spectrum demand of bands by total bandwidth supports the general trend of increasing reliance on wireless cameras in production.

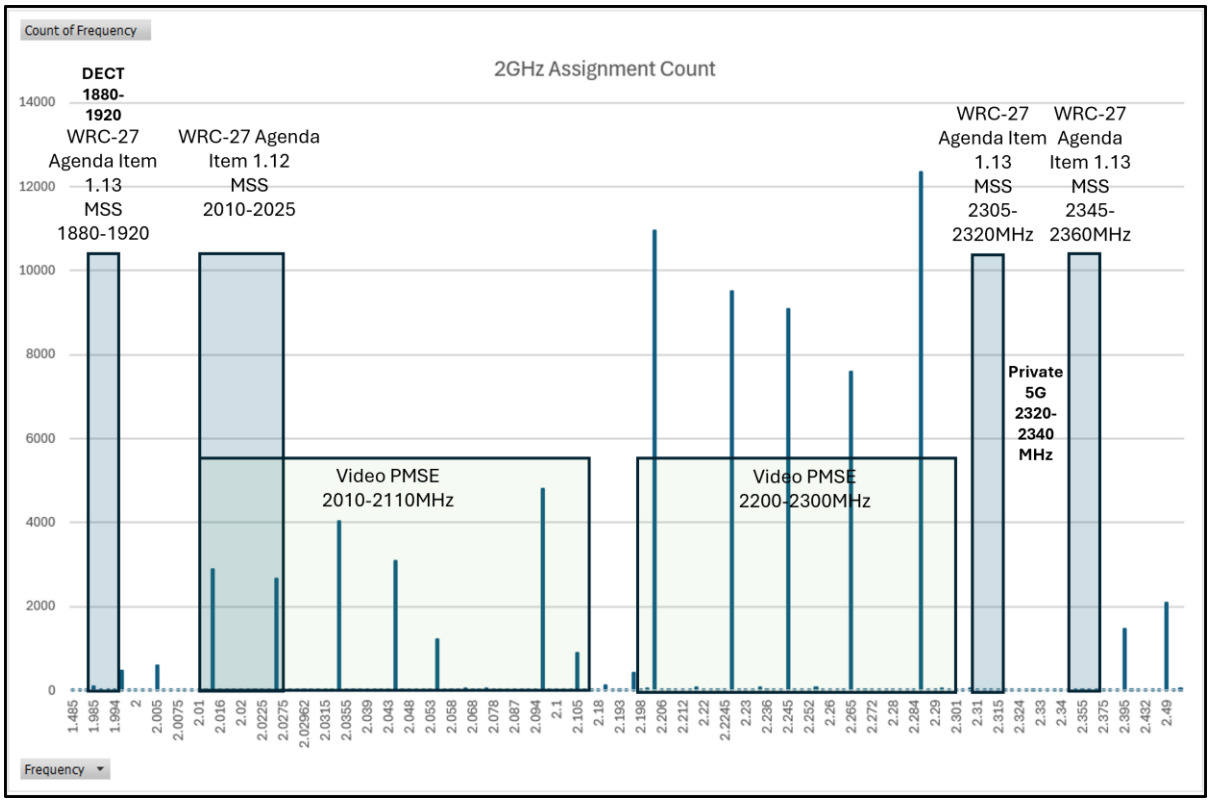
Not fully captured in the assignment data is the extent of wireless video use from annual wireless camera assignments held by UK news organisations. The individual assignments held by each organisation are used daily for multiple deployments around the UK. Subject to our own requirements, the BBC is also willing to release these assignments back to Ofcom when requested for other production use.

Classifying total bandwidth used for wireless video gives a broad picture, but deeper insight can be found in the individual assignment data subsequently supplied by Ofcom. Out of over 95,000 assignments, around 50,000 are for the 2.2 GHz band, with around 20,000 in the 2.0 GHz band supplemented by exceptional clearances in adjacent ranges. The remainder fall in the 7 GHz range, with a small number at 12 GHz.

Broadly, assignments in 2 GHz have risen by around 30%, from 9,424 to 12,223 in 2024. Assignments in 7 GHz rose from 1,542 to 4,015 - an increase of 260%. This is considerably higher than the rise for 7 GHz by total bandwidth of 149%, a difference that may reflect varying proportions of 10 MHz and 20 MHz assignments over the period.

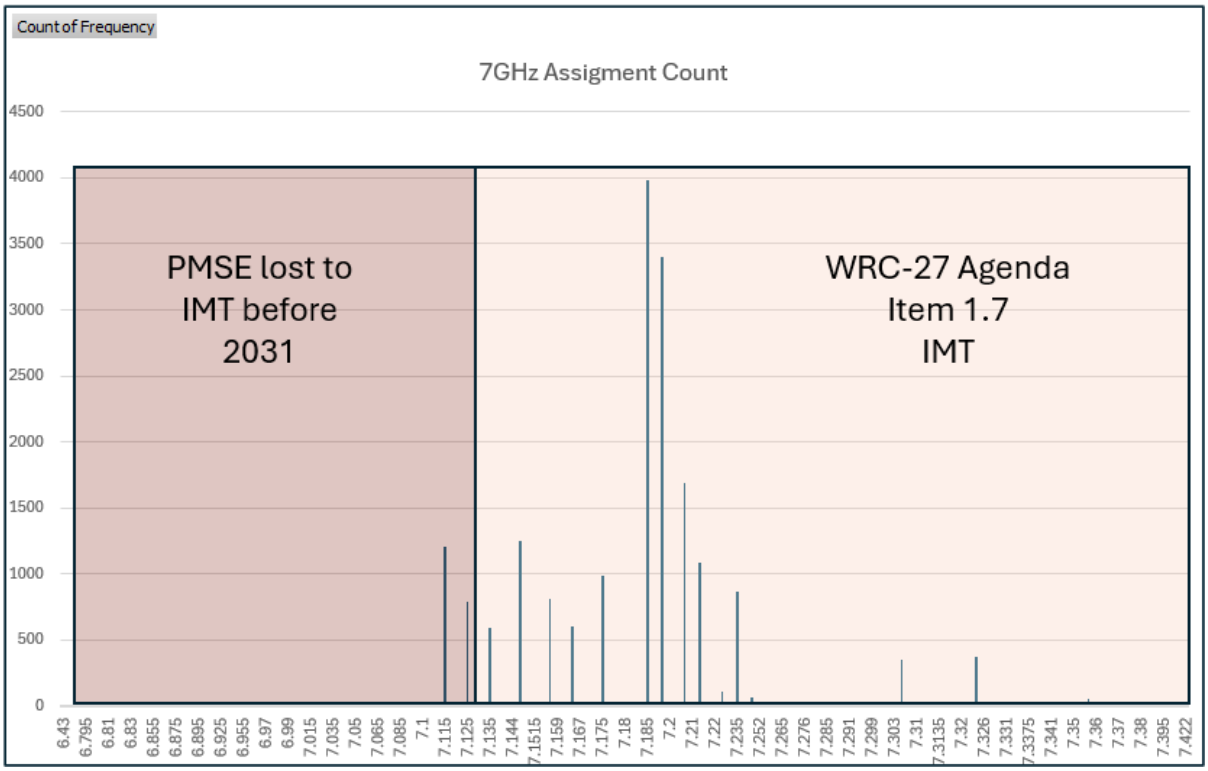


source: BBC analysis of Ofcom data release, February 2026



*source: BBC analysis of Ofcom data release, February 2026*The 2 GHz bands are under threat from WRC-27 Agenda Items 1.12, 1.13 and 1.14 including 2010–2025 MHz, the only harmonised wireless camera spectrum in Europe. Loss of this range could restrict the

number of available channels for major events. The impact of these WRC-27 agenda items is discussed further in our response to Question 26.



source: BBC analysis of Ofcom data release, February 2026

Particularly concerning are international proposals that could affect the entire 7 GHz band. Greater use of 7 GHz was encouraged by Ofcom in its 2014 strategy statement and characterised as the preferred resource for video PMSE. The data shows a much greater growth in and reliance on 7 GHz than the total bandwidth figures alone suggest. Ofcom's proposal[5] to give notice to remove PMSE from 7110-7125 MHz gives even greater need to give very careful consideration to the rest of the 7 GHz band, especially in light of the WRC-27 Agenda Item 1.7 for IMT.

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

[5] Ofcom: Consultation: Expanding access to the 6 GHz band - Our approach to future mobile use in high density areas and incumbent users (April 2026) https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/expanding-access-to-the-6-ghz-band-approach-to-future-mobile-use-and-incumbent-users

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?

(a) Almost all BBC television programmes make use of audio PMSE during their production. The tables below show the estimated use of audio PMSE systems for a typical day's programmes (Friday 24 October 2025). Every single programme scheduled on BBC One and BBC Two on that day used audio PMSE technology during its creation.

BBC ONE	Programme	Comment	Radio Mics	In-Ear Monitors
0600	Breakfast - Studio and Live Location	Also pre-recorded Newsgathering	8	4
0600	14 Regional and National Opts	Also pre-recorded Newsgathering	14	14
0930	Morning Live - Studio	Also pre-recorded pieces	10	4
1045	Crimewatch Live - Studio	Also pre-recorded pieces	10	4
1130	Homes under the Hammer - Location	Assuming 4 experts and four competitors	8	0
1215	Bargain Hunt - Location	Assuming 4 experts and four competitors	8	0
1300	BBC News at One	Also Live and pre-recorded Newsgathering	8	4
1340	14 Regional and National News Programmes	Also pre-recorded Newsgathering	14	14
1400	Sister Boniface Mysteries - Location Drama	Cast with mics sewn into multiple costumes	10	0
1445	Escape to the Country - Location	Assuming 2 experts and 2 competitors	4	0
1545	The Repair Shop on the Road - Location	Assuming 4 experts and four guests	8	
1630	The Inner Circle - Studio	Assuming hosts and ten competitors	12	2
1715	Pointless - Studio	Assuming hosts and ten competitors	12	2
1800	BBC News at Six - Studio	Also Live and pre-recorded Newsgathering	8	4
1830	14 Regional and National News Programmes	Host, contributors and weather	42	28
1900	The One Show - Studio and Live Location	Including hosts, guests and bands on the piazza	30	10
1930	Policing Paradise - Location	Pre-recorded contributors	4	

2000	DIY SOS - Location	Pre-recorded contributors	6	
2100	Have I Got News for You - Studio	Pre-recorded contributors	6	2
2130	How are You? It's Alan (Partridge) - Location	Pre-recorded contributors	4	
2200	BBC News at Ten - Studio and Newsgathering	Also pre-recorded Newsgathering	6	4
2230	Regional and National News Programmes - Studio and Newsgathering	Host and pre-recorded weather	14	14
2240	The Graham Norton Show - Studio	Host, guests and band	15	6
2320	RuPaul's Drag Race UK - Studio	Pre-recorded	10	2
0035	Starter for 10 - Studio and Location	Body worn by actors	6	0
		TOTAL	**277**	**118**

BBC TWO	**Programme**	**Comment**	**Radio Mics**	**In-Ear Monitors**
0630	Chronicles of the Sperrins - Location		4	
0700	Weatherman Walking - Location		4	
0730	Gymnastics: World Championships - Sport OB	An estimate for a Sports OB	20	6
1230	Political Thinking	Politics Live Mon–Thurs	6	2
1300	Impossible (Glasgow) - Studio	Multi contestant game	20	2
1345	The Finish Line (Belfast) - Studio		10	2
1430	Unbeatable - Studio		6	2
1515	The Great British Menu - Location		10	
1615	Wonders of the Monsoon - Location		2	
1715	Flog It! - Location	Simultaneous experts and guests	12	2
1800	Richard Osman's House of Games - Studio		6	2
1830	Strictly - It Takes Two - Studio		8	2

1900	Monty Don's Spanish Garden - Location		4	
2000	Gardeners' World - Location		4	
2100	Agatha Christie: Lucy Worsley - Location		4	
2200	QI - Studio		8	2
2230	Newsnight - Studio	Double Mics used in 54D	12	4
2300	Halloween Feature Film		6	
		TOTAL	**146**	**26**

Notes:

(1) Other news studios operate in W1, Cardiff and Scotland for other live channels.
(2) Not shown here are Friday night live football in Wales and Northern Ireland and rugby on BBC Alba.

For many years, the trend has been for the complexity of the largest events to increase, driven by a growing number of simultaneous performances and the desire to innovate year on year. BBC presentation at events has become more mobile and nomadic, exploring more of the venue and giving viewers a more immersive experience. Musical acts employ more backing vocalists and instrumentalists, and key headline performers sometimes use dual microphones to mitigate against failure during a live performance. Each of these factors results in a relatively small increase in assignment numbers, but cumulatively they produce a slow, sustained rise in overall demand.

(b) The figures for UHF Channel 38 licences have reduced only very slightly over the period, but Channel 38 remains the only uncoordinated licence product for multiple microphones and IEMs. Its continued use reflects steady demand from the cultural sector, where it is highly valued by newsgathering operations and theatres, particularly touring shows. The slight reduction may be related to growth in Bluetooth and Wi-Fi options, which are most suitable for non-live applications of one or two devices but do not replace the utility of Channel 38, its capacity for multiple simultaneous devices, or its reliability for live performance. VHF shared licence numbers reduce year on year, but volumes are small and most likely relate to legacy equipment being replaced at end of life with UHF alternatives.

(c) The BBC has limited recent experience of fixed audio links and none of ADS licences. We have previously used fixed audio links to connect audio from radio outside broadcasts back to studio centres, but alternative means of providing that connection - whether via IP-based systems or satellite - are normally cheaper and easier to establish. The observed reduction in talkback licences is most likely explained by increased use of

unlicensed equipment in the DECT bands, which has become commonplace and provides a practical way to avoid consuming increasingly scarce UHF frequencies.

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? (b) national wireless microphone licences? (c) talkback, fixed audio links and ADS licences?

(a) The BBC expects a continuation of the trend for increased complexity driven by the desire to offer audiences a more complete and engaging experience. These changes are likely to be incremental, year on year, but new artistic and creative visions will continue to demand increasing technical complexity. Future demand is hard to predict precisely, but we are not aware of any factors that would lead to a significant change in the current growth rate.

(b) National wireless microphone licences provide a simple licence product enabling the same equipment to be used geographically unrestricted for a range of applications. This is particularly valuable for touring theatre shows and short notice film and TV production. Due to the availability of competitively priced equipment, VHF and Channel 38 are also widely used in places of worship, education and lower tier events.

VHF use is largely legacy given relatively little availability of new equipment and is likely to further decline. In contrast, numbers of Channel 38 licences do not fully reflect the reliance, degree of use and the quantity of equipment owned and operated, something underestimated when Channel 69, which preceded Channel 38, was withdrawn at 800 MHz Clearance.

There is no current spectrum alternative to the Channel 38 national wireless microphone licence, and its continued availability needs to be protected.

(c) The decrease in demand for licensed talkback systems is due, at least in part, to the need to prioritise microphone and IEM systems in licensed spectrum. As demand for those systems continues to increase, or should the spectrum available for them decrease, we would expect further migration of talkback to unlicensed spectrum.

Question 6: Do you agree that, given the trends, we are right to focus on wireless microphones/IEMs?

By far the greatest increase in coordinated assignments over the period is for microphones and IEMs. For this reason, and because of ongoing discussions about the UHF spectrum upon which they rely, it is entirely right to focus on microphones and IEMs.

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?

There are different categories of wireless audio users and different types of events, each with different needs. For some users, including newsgathering, low equipment cost and easy access to spectrum are the primary drivers when the number of devices is in single figures. Users operating in bands under general authorisation can stage their events successfully, tolerating the risk of interference from uncoordinated users and deregulated equipment.

For other users and applications, including the BBC outside newsgathering, the primary drivers are audio quality, link reliability and much greater scale. For these users, coordinated spectrum is a necessity. The UHF band and DME band together provide the appropriate resource due to the availability of high-quality equipment in these bands. With careful planning, there is currently usually sufficient spectrum available for even the largest events. BBC Studioworks already makes extensive use of the DME band at its production centres for the highest-profile shows, often with multiple productions running simultaneously requiring the DME band to supplement full use of the UHF band.

The DME band presents similar interference characteristics to the UHF band. However, unlike the 470-694 MHz band, the DME band is not harmonised internationally. Apart from the UK, the band is only available in one other country, Austria (for indoor use only). Consequently, it has limited support from equipment suppliers. Until recently, only radio microphones were available, and not all equipment could tune above 1 GHz. The situation is beginning to change with the introduction of multichannel IEM systems in the DME band. Equipment supply is likely to expand if other countries follow in making the band available, but the severe conservatism of aviation authorities elsewhere has so far prevented much progress. The BBC's direct experience, and the sharing work done by Ofcom, demonstrates that there is no technical barrier to wider adoption.

Question 8: What actions could enable greater take-up of the DME, DECT and licence-exempt bands in the future?

The BBC has already made significant investments in the DME band. Most professional audio PMSE equipment available for hire in the UK is in the UHF band, so the BBC has installed DME band equipment in its fixed studio infrastructure, allowing visiting productions the widest possible use of UHF. Other broadcasters, theatres and venues with installed equipment could follow this approach, and some have already begun to do so.

The BBC has also moved production talkback systems from UHF to DECT, along with use of other equipment in licence-exempt bands. However, while this has removed some assignments from UHF, these technologies are not suitable for capturing the audio of performers, and can only be used for production purposes, due to their characteristics in terms of audio quality, latency and reliability.

To encourage greater take-up of the DME band, Ofcom could use its influence with other spectrum regulators to share the UK's experience and provide appropriate reassurance that aviation safety has not been impacted. The change of licensing status to licence-exempt for some smaller frequency bands has already simplified matters and reduced costs for community-based users, but wider information sharing may be helpful to encourage further adoption.

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?

For any potential band to be suitable for PMSE applications such as microphones and IEMs, it must satisfy some basic criteria: it must offer a substantial amount of bandwidth; it should be harmonised internationally to allow a commercial ecosystem to develop; it must offer similar physical characteristics to existing bands in terms of equipment size, antenna gain and propagation; and it must offer a reasonable prospect of interference-free operation, which in practice probably means it needs to be coordinated and licensed.

Many of the currently available bands fail to meet one or more of these criteria. For example, the 800 MHz centre gap (823–832 MHz) is uncoordinated and suffers from high levels of interference from adjacent-band wireless broadband equipment.

The table below shows the BBC's assessment of all bands currently available for audio PMSE in the UK.

Range	Description	Issues
170–210 MHz	Spot frequencies (~16) for uncoordinated and some coordinated use, including three BBC UK-exclusive frequencies. Also high power Wisycom (1W) for UK newsgathering on 199.9 MHz.	Used historically; largely replaced by UHF with smaller antennas. No more than five usable in the same location. Subject to high noise floors, although recent digitally modulated equipment offers improved performance. Relatively little equipment available.

Range	Description	Issues
450–470 MHz	Extensively used for narrowband talkback, with the ranges allocated to PMSE internationally.	Already fully utilised for narrowband talkback systems.
470–694 MHz (exc. 606–614 MHz)	Used widely from low-tier to the most high-profile applications and the highest-demand events. Coordinated and licensed by Ofcom. Interleaved with DTT.	Dominant radio microphone and IEM band in the UK and internationally. Digitally modulated equipment performs increasingly well in the presence of DTT and is more spectrally efficient.
606–614 MHz	Channel 38: highly used uncoordinated licensed range for lower-tier applications and newsgathering.	Unprotected from interference between PMSE users and therefore not suitable for high-end use.
694–703 MHz	Known as a ‘guard band’ by Ofcom but still available for coordinated licensed use.	Not favoured for high-profile use due to risk of interference from 5G handsets above 703 MHz.
823–832 MHz	Becoming licence-exempt for uncoordinated use. Duplex gap adjacent to 4G services. Only 825–828 MHz deemed most usable.	Not suitable for high-profile use, although used for newsgathering and local radio IEM. Little high-end equipment available.
863–865 MHz	Short-range device band also used for uncoordinated consumer equipment, wireless speakers and headphones.	Not suitable for professional radio microphone use.
960–1154 MHz	Previously UK only; now also available in Austria. A valuable addition for high-end coordinated assignments, heavily used in studio centres and festivals when UHF is insufficient.	Relatively little equipment available given limited international market. Availability is subject to universal exclusions and geographical coordination; can be as little as 55 MHz in southeast England.
1785–1805 MHz	Internationally harmonised radio microphone spectrum; very little used.	A small frequency range with limited equipment availability but potential with modern digital equipment over short indoor ranges, e.g. news studios. Considered for use at the time of the 700 MHz clearance.
2400–2483.5 MHz	Uncoordinated, unlicensed radio microphones in an ISM band. Suitable for non-live newsgathering but not for other professional applications.	Audio quality and latency not sufficient for high-profile use.

CEPT will shortly begin a work item to create a new ECC Decision to increase the harmonisation status of the 1350–1400 MHz band for audio PMSE. This has previously been studied by Ofcom but not adopted, as we understand it is used by military radar systems in the UK. It should also be noted that there are fixed link pairings of 1350–1375 MHz with 1492–1517 MHz and 1375–1400 with 1427–1452 MHz under T/R 13-0

ECC DEC(15)01 harmonises the technical conditions for use of audio PMSE, SDL and PPDR in the 700 MHz duplex gap. A similar harmonisation measure ought to be feasible for the 1427–1518 MHz band, which is harmonised for SDL by ECC DEC(13)03 and ECC DEC(17)06.

In paragraphs 5.23 & 5.24 of the Call for Inputs, Ofcom asks whether short term sharing with other applications might be feasible. Whilst it may be technically possible to share, the practical option to share is only feasible if equipment is available and priced such that occasional use is cost effective. In our analysis above, there are several bands identified in the UK for PMSE use which are not used because of equipment supply reasons. Even if equipment that could operate in a currently underused mobile band was available, it may have a very short working life if that band subsequently is more heavily used – without any security of tenure, no operator can afford to acquire equipment and no manufacturer can afford to develop equipment to tune to bands that have little global harmonisation.

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?

The characteristics of different audio applications have a significant bearing on spectrum requirements. Music production requires low latency so that performers can perform in synchronisation with one another, and with themselves when hearing their own output back through wireless IEMs. Complex speech productions have similar requirements. All professional productions require very high levels of resilience - any interruption to a live audio feed is immediately audible to the audience.

A requirement for low latency implies less signal processing, consequentially higher digital bitrates and thus a requirement for more spectrum per audio channel. The low latency requirement is the round-trip time – that is the time from audio being produced by one performer to hearing it from the IEM of another performer. The round-trip time is the sum of all the steps in the audio path: radio microphone, mixing console, routing system, IEM. Similarly, the most robust resilience is normally delivered by using independent systems employing separate radio channels.

Larger productions require many circuits, and these are most conveniently provided by frequency bands with sufficient capacity. Equipment has a limited tuning range, and for large-scale users it is important to maximise flexibility and minimise setup times. Frequency bands narrower than 50 MHz pose additional burdens on equipment costs, setup flexibility and failure recovery. The most demanding use cases are those combining high audio quality, low latency and large numbers of simultaneous circuits -

conditions routinely encountered at major broadcast events and in large studio complexes.

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?

The reduction in UHF spectrum through the 800 MHz and 700 MHz clearances has been managed, despite increasing demand, through a combination of more efficient use of spectrum and the addition of the DME band. Digitally modulated wireless microphones with more linear output stages and improved reverse intermodulation performance have allowed closer packing of frequencies, increasing the number of assignments to as high as 40 per 8 MHz block compared to older analogue equipment which might achieve 12. Tuning ranges have also improved from typically 24 MHz a decade ago to 120 MHz or more, giving much greater flexibility.

The introduction of the DME band has been important in meeting rising demand. However, the full 204 MHz between 960–1164 MHz is not available: a maximum of 128 MHz remains after universal protection ranges for certain aeronautical services, and the available spectrum is further reduced by geographical restrictions. In southeast England, where much PMSE production is concentrated, as little as 55 MHz may be available - equivalent to approximately seven 8 MHz channels at a location such as Elstree Film Studios.

While outdoor festivals such as Glastonbury can accommodate high peak demand through time diversity and physical separation between stages, this is not achievable for other high-demand scenarios, particularly indoors. In studio complexes and similar environments, adjacent productions run simultaneously and independently throughout the production day, requiring robust assignment planning to accommodate all eventualities without delaying production or adding costs. For our own managed studios, significant planning and expertise already go into managing these assignments, with little opportunity to operate in less spectrum without introducing unacceptable risk.

Wireless Multichannel Audio Systems (WMAS) have been promoted as a major advance in spectrum density. However, evidence that they achieve greater density in practice is not yet convincing. Claims of up to 32 microphones and 32 IEMs within an 8 MHz channel rely upon compromises in sampling, quality and latency that are not yet fully understood. Given that conventional digitally modulated radio microphones can already

achieve up to 40 audio channels within an 8 MHz channel, the advantages for microphones appear limited. There may be greater potential for IEMs, where current analogue FM equipment and intermodulation-free planning are less spectrally efficient, but this too remains unproven at the required quality and latency levels.

Experienced spectrum coordinators already achieve near-optimal density at the biggest events. Smaller events could benefit from more planning expertise, but generally have sufficient spectrum at current demand levels. It may become necessary, if demand continues to increase and/or spectrum supply becomes constrained, that more, smaller events will require bespoke spectrum plans, with the increased cost and skillset and complexity that necessarily come with that, and could place such productions at increased risk. House systems, perhaps using WMAS technologies, could enable successive acts to reuse the same spectrum, but these will not be acceptable to the most high-profile artists who require full control of their own equipment.

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?

The historic spectrum efficiency challenge has been the intermodulation products generated when operating multiple narrowband audio PMSE devices in the same location. Since the 800 MHz and 700 MHz clearances, equipment quality has improved significantly, though at increased cost. The introduction of digital signal processing for the companding of FM radio microphone receivers has improved performance but introduces a delay of approximately 2 ms. To maintain acceptable round-trip times for performers on stage, IEMs tend to operate without this processing and therefore have poorer spectrum efficiency than radio microphones. Adding processing to IEMs also increases power consumption and reduces battery life.

Manufacturers have developed new wideband, multichannel systems which claim to significantly improve the number of audio channels per MHz. However, these systems have many configurable settings, and the BBC's limited experience so far suggests that when configured for low latency and high-quality audio, they are not substantially different in channels per MHz from more traditional narrowband systems. The exception may be for multiple IEMs, but this is yet to be demonstrated in practice.

Regarding reliability, operators have legitimate concerns about multichannel systems and the production risk of equipment failure. The risk is highest for radio microphones, which capture the performer's content directly. IEMs are also critically important during multi-performer segments, but very short-term loss is less immediately damaging. Operators are consequently particularly nervous of wideband systems that combine

radio microphones and IEMs in the same unit, given the potential for a single point of failure to affect both.

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?

It remains unclear whether the new wideband audio PMSE equipment being promoted by some manufacturers delivers all the benefits claimed: achieving the triple goal of high-quality audio, low latency and high spectrum efficiency is challenging (see Q10). There are also significant operational factors to consider, particularly the risk of equipment failure in systems that bundle many channels together.

It is already possible to receive a licence for a full 8 MHz TV channel rather than for a single circuit. Ofcom therefore already provides an incentive to maximise the number of circuits per TV channel: if wideband systems can demonstrate the necessary resilience and capabilities in practice, operators will increasingly adopt them.

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?

To meet challenging spectrum demand, event coordinators more closely analyse requirements for wireless microphones and IEMs and the solutions they can deploy, compared to less demanding events. Prior desk planning and automated processes, relying on assumptions, can result in a conservative and robust plan but at the risk of not meeting the requirement in terms of frequency count, with the danger of interaction leading to failure and requiring rework on site.

These are highly extensive one-off deployments subject to complex interactions and propagation, particularly in indoor spaces. They are rigged, tested and modified, often to tight timescales. The full range of options is already exploited: choosing the most spectrally efficient equipment, judging placement of receive and transmit antennas, breaking a complex solution into multiple zones to minimise interactions, aided by bespoke software planning tools. The current working practices and spectrum planning of the best coordinators on the ground remain the gold standard. We are not aware of any changes or alternative means of improving efficiency that are not already in place.

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?

Considerable expertise is already employed for spectrum coordination at high-demand events, supported by manufacturers and equipment suppliers. As demand continues to increase, and spectrum availability decreases, the number of events for which such coordination is necessary will increase. Some of this can be industry-led, but Ofcom PMSE will need to build on its current support for these coordinators and venues to achieve efficient use of spectrum for wireless audio. Ofcom could further assist by maintaining a greater presence on the ground - including Assurance and Enforcement teams - and by engaging more regularly with the industry. More routine engagement would avoid instances including at the Cheltenham Festival. Ahead of the event Ofcom PMSE would not engage with the BBC regarding a foreseen issue and only responded, and only remotely, once the festival was underway and the predicted interference issue manifested itself. Another example where Ofcom assistance would have been valuable was at the launch event for the Bradford City of Culture in January 2025. The BBC undertook onsite spectrum management on behalf of multiple event and boradcaster participants made more difficult without the benefit of a complete picture of licensed use, known only to Ofcom.

Future Trends and Opportunities: Wireless Video

Drivers of demand

Question 16: What factors have driven the demand for wireless video bandwidth, in particular for: (a) the increased bandwidth required for the largest sporting events? (b) the bandwidth required for nationally important state events? (c) the slow growth or decline in bandwidth used at horse racing fixtures?

(a) Coverage of the largest sporting events has been enhanced over the period through greater use of onboard and airborne cameras, including drones. These require additional wireless bandwidth, much of which has been found in the 7 GHz band. Additionally, UHD production has become commonplace, which can double the bandwidth required for each wireless link.

(b) The best way to maintain an up-to-date spectrum plan for nationally important state events is for Ofcom to hold regular meetings with relevant stakeholders to allow continuous updates and minimise last-minute confusion and costs.

(c) The BBC does not have direct first-hand knowledge of horse racing outside broadcasts.

Question 17: What factors could drive further changes in the demand for wireless video bandwidth in the future?

The factors that drive changes in wireless video bandwidth are often common across all types of events: an increase in required picture quality, such as a universal move to UHD production, and an increase in the number of cameras deployed. Each of these improves the audience experience. The BBC's preference is always to use wired cameras wherever possible, but where wireless is required - and the number of such situations continues to grow - an overall increase in camera numbers will drive further demand for bandwidth.

Potential new 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?

Wireless technologies for production allow for more efficient and cost-effective setups, providing broadcasters with greater artistic and editorial freedom alongside enhanced safety. Presenters, contributors and production staff can move freely without trailing wires; breaking news coverage can be achieved more swiftly without deploying wired infrastructure; and reports can be delivered more dynamically. As noted in the Call for Input, demand for wireless cameras increased by 36% in the period 2018–2024.

Harmonisation of frequency bands across administrations is an important enabler. ERC Recommendation 25-10[6], which provides a harmonised framework for terrestrial audio and video PMSE in CEPT countries, identifies the 2 GHz band for video links. EBU research[7] confirms that frequencies between 2000 and 2500 MHz are the most widely used across Europe for wireless cameras, radio links and a range of production applications.

In the UK, Ofcom's 2014 Strategy for Video PMSE Applications[8] identified 7 GHz as the preferred resource. Since that strategy was published, there has been a significant increase in 7 GHz assignments, reflecting the sector's response to a stable regulatory environment and the suitability of 7 GHz for modern portable wireless cameras over shorter, unobstructed transmission paths. However, 7 GHz has not been harmonised internationally and there is limited use of the band for video PMSE in other countries.

7 GHz is an important band for the BBC, particularly as 2 GHz becomes increasingly congested. However, spectrum in 2 GHz continues to be essential for video PMSE

[6]ERC: Recommendation 25-10 Frequency Ranges for the Use of Terrestrial Audio and Video Programme Making and Special Events (PMSE) applications (2023) https://docdb.cept.org/document/838

[7]EBU: Technical Report 076, Results of a Survey on PMSE Spectrum Use by EBU Members (2024) https://tech.ebu.ch/files/live/sites/tech/files/shared/techreports/tr076.pdf

[8]Ofcom: Statement on a Strategy for Video PMSE Applications (2014) https://www.ofcom.org.uk/siteassets/resources/documents/consultations/7974-pssr-2014/associated-documents/statement_on_camera_strategy.pdf

applications that are not suitable for 7 GHz - typically those involving longer transmission paths or obstructed paths, such as video links from helicopters, motorbikes or other moving vehicles. The continued availability of dedicated PMSE spectrum in both 2 GHz and 7 GHz is critically important to the BBC.

The BBC notes the proposal made by Ofcom[9] in April 2026 to give notice of removal of PMSE access to the 7110-7125 MHz band, partly justified by the assertion that "there is sufficient bandwidth in the rest of the 7 GHz band to meet PMSE demand". As explained in more detail in the response to Q 26, the potential international decision on the identification of the rest of the & GHz band to IMT causes concern about long-term security of tenure in this band.

Question 19: Which potential additional bands might be suitable for video PMSE applications, particularly at the largest events and venues?

The BBC is aware that other bands are available for video PMSE in some European countries, such as 47.2–50.2 GHz. However, these are not widely used and, owing to their propagation characteristics, require line-of-sight for stable communications, which limits their utility at large events. Higher frequencies also require more power to maintain coverage, raising EMF safety considerations. Use of such frequencies is exceptional and not suitable for most video PMSE applications[10].

The successful use of private 5G networks by the BBC and others demonstrates the suitability of additional bands for video PMSE at major events, including 3.8–4.2 GHz and 2320–2340 MHz. Access to a local, private network gives content creators independence from public network operators and provides exclusive use of network capacity, biased for uplink, with a high level of security.

Some content creators use spectrum in the 2.4 GHz, 5 GHz and, in some countries, 6 GHz bands on a licence-exempt basis for video PMSE. However, using these Wi-Fi bands can only be a best-effort solution without guaranteed quality of service. Licensed spectrum in the 2 GHz and 7 GHz bands is therefore expected to remain critical for video PMSE at large events.

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[9] Ofcom: Consultation: Expanding access to the 6 GHz band - Our approach to future mobile use in high density areas and incumbent users, April 2026 https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/expanding-access-to-the-6-ghz-band-approach-to-future-mobile-use-and-incumbent-users

[10] ECC Report 323: Spectrum Use and Future Spectrum Requirements for PMSE: https://docdb.cept.org/download/40d7906e-9e88/ECC%20Report%20323.pdf

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?

Video PMSE encompasses a range of applications - wireless cameras, portable video links, mobile video downlinks and uplinks - each with different requirements for quality, latency, reliability, deployment effort and cost. For high-profile events covered by the BBC, implementation requires robust wireless transmission architecture designed to support high-definition, low-latency video in dynamic, interference-prone environments. It is helpful to distinguish three categories of video PMSE.

Principal video PMSE remains the dominant technology choice across the professional media production sector. These systems use COFDM for resilience against signal fading and multipath distortion - crucial within venues and built-up locations and for cameras mounted on cars, motorbikes or helicopters. Standard channels are 10 MHz wide, though 4K video may require 20 MHz using dual-pedestal configurations. Even with HEVC compression, transport rates of 20–60 Mbps at low latency are typical. Frequency agility and dynamic spectrum access are important, as systems must navigate crowded RF environments. Many setups include real-time spectrum monitoring, automatic frequency selection and forward error correction.

Cellular-based PMSE, often used for short-notice newsgathering via bonded SIM technology, requires mobile broadband spectrum. Reliability and uplink capacity can be improved by aggregating across multiple 4G and 5G public networks, but public network coverage can be unreliable or congested at crowded venues. Network slicing could offer a related solution, with 5G operators partitioning their network to guarantee specific performance characteristics, and 5G multicast might be suitable for talkback. Both of these are currently being investigated, but public mobile network operators do not yet offer network slicing as a routine solution for PMSE. Private 5G networks retain the advantages of cellular-based PMSE with access restricted to authorised users, enabling optimisation for uplink capacity, low latency and reliability.

Wireless video assist systems relay camera output to a director’s local monitor on film and TV sets, using Wi-Fi bands and licensed UHF frequencies alongside specialised wireless protocols. Drones also use Wi-Fi in 2.4 GHz or 5 GHz to stream video to the ground. These licence-exempt options do not guarantee quality of service and operate on a best-endeavours basis.

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?

The BBC is not aware of any technologies on the horizon that would offer any increase in video spectrum efficiency. The OFDM-based links currently in use have adjustable parameters that allow optimisation for different situations, and the BBC has extensive experience of getting the best from each link. Similarly, 5G-based links have parameters that can be varied to suit the available channel, although the selection of suitable parameters is currently only available in private networks (i.e. that are managed by the PMSE operator). At this time, it's not known if third-party network operators will be able to configure network slices to perform adequately. Use of public 5G networks, without network slicing, cannot give guaranteed quality of service. The efficiency gains available from current technology are already being realised in practice.

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?

The BBC does not believe there are significant regulatory barriers. The current licensing regime is based on technology neutrality, accommodating both unidirectional OFDM-based links and bidirectional IP links. This flexibility is appropriate and should be maintained.

Question 23: What types of video demand could realistically be supported by private (for example 5G) networks?

Private 5G networks and other IP technologies such as mesh are now an established method of providing contribution links for multiple wireless cameras over short distances. The advantages are guaranteed uplink capacity and low latency in dedicated licensed spectrum, with the added benefit of bidirectional links. The BBC has already deployed private 5G for a variety of applications including newsgathering at the Coronation, remote cameras for sports coverage (the North West 200), and general production use on programmes including The One Show and Winterwatch.

Routine newsgathering use of private 5G has been advanced by the introduction of short-notice access to n40 spectrum (2320–2340 MHz) by Ofcom. For more general production, short-notice access to greater bandwidths in upper n77 (3800–4200 MHz) is crucial, enabling more camera links at higher quality. Currently n77 spectrum is only available through a Shared Access Licence (SAL). The recent addition of an online application process is welcome, but application times remain uncertain and can extend to 42 days, which does not suit production timescales. A turnaround time of around 2-3

days as in the 2.3-2.4 GHz SAL band would be more helpful. The licensing product and fees are also not well suited to short-duration use.

A further welcome step would be for existing wireless video bands at 2 GHz and 7 GHz to be made available for private 5G-type systems. The BBC believes there should be no obstacle to this, given that the minimum requirements for wireless cameras and video links in IR2038, referencing EN302064, constitute a technology-neutral standard.

Question 24: What changes to working practices and spectrum planning could improve video spectrum efficiency in the future?

The BBC does not have specific suggestions beyond those already in practice. Current planning and operational practices strive to ensure the minimum spectrum use that each production requires to achieve the necessary quality and number of cameras.

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?

The BBC does not believe there are significant barriers. Current practices already represent the practical limit of what can be achieved for professional video PMSE without compromising the quality and reliability that audiences and commissioners expect.

Other Comments

Question 26: Do you have any other comments or views on the issues raised in this document?

The BBC has responded to most of the questions above within their specific scope, but it would also like to address an important wider point: while demand for PMSE spectrum is increasing, the supply of spectrum available for PMSE risks decreasing over the coming years. It is important that Ofcom considers the likely timelines and impact changes in spectrum classification and use may have on future access for PMSE.

The BBC outlines below its main concerns in this area.

1. Demand for both audio and video PMSE spectrum is increasing, and will continue to do so. This is demonstrated by the statistics of past use, and our confident expectation that this trend will continue for both audio and video. The BBC has not identified any technical or working practices that could significantly increase spectrum efficiency for these demands.

2. Set against this are potentially significant reductions in spectrum supply for both audio and video PMSE:

(a) **Audio PMSE in the UHF Bands:** For audio, the impact of a transition away from digital terrestrial television will open questions of how the UHF spectrum in the band 470–694 MHz will be used in the future. The current PMSE ecosystem has developed alongside DTT, benefiting from the interleaved spectrum and relatively stable regulatory environment that DTT's presence in UHF has provided. The BBC is advocating for a planned transition away from DTT in the 2030s that support audiences. As DTT scales down or ceases - a trajectory that Ofcom's own analysis[11] considers plausible within the next decade - the future of that spectrum becomes an open and urgent question. 470–694 MHz is the core frequency band used by radio microphones and IEMs, supplemented by access to other bands such as parts of the aeronautical DME band (960–1164 MHz), depending on location. The GSMA has already assumed[12] that the 600 MHz band will be made wholly available for IMT once identified, likely at WRC-31. In the same publication, the GSMA describes 470–694 MHz as a "candidate for an additional band [for IMT]". The BBC stresses in the strongest possible terms that long-term access to a significant part of the 470–694 MHz band, or sufficient suitable alternative spectrum, will be required for audio PMSE use, and that at some key locations with high production density, such as the BBC's Broadcasting House campus in Central London and Salford Quays, the loss of the access to any of this spectrum will create significant challenging impacts. We therefore urge Ofcom, when considering the future use of the band 470–694 MHz, to consider how peak PMSE demand - both for particular events and for specific locations of constant high demand - can continue to be met, especially if or when the 600 MHz band or parts thereof is made available to other services.

As the UK discusses the timing and means of transition away from DTT towards IP for distribution of broadcaster content, a question opens up about the future use of the 500 and 600 MHz bands. The BBC believes that any decision about the allocation of either of these bands to new applications or services requires a full assessment of the needs of PMSE to have been carried out, including how peak PMSE demand - both for particular events and for specific locations of constant high demand - can continue to be met. Even given the increased spectrum made available by the eventual removal of DTT from these bands, Ofcom and the PMSE community should assess whether existing and predicted future growth of PMSE

[11] Ofcom: Report: Future of TV distribution (October 2023) https://www.ofcom.org.uk/tv-radio-and-on-demand/public-service-broadcasting/future-of-tv-distribution

[12] GSMA Vision 2040: Future Spectrum Needs (November 2025) https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2026/01/Vision-2040-Future-Spectrum-Needs-v4.pdf

can be accommodated in the cleared spectrum. If new frequency bands for audio PMSE are identified. . Absent this while frequency bands may be made available they could be inaccessible if manufactures aren't suitably incentivised to make equipment. The UK market may be insufficient for this. Harmonisation of the frequency band across a wider market could ensure scale of opportunity.

(b) **DECT Use in 1800-1900 MHz:** Since the migration of PMSE systems out of the 700 and 800 MHz bands, some audio PMSE - primarily talkback systems - has moved to DECT technologies in the 1880–1900 MHz band. The Call for Input does not mention that this band is one of those under consideration under WRC-27 Agenda Item 1.12 for use by the mobile satellite service. Although we understand that there is little support for an allocation of this band under AI 1.12, no formal position has yet been taken by the UK and no final decision will be made until the WRC in November 2027. The potential risk to use of this band by PMSE applications using DECT technology is relevant given that DECT technology is proposed as a possible mitigation to offset increased demand in other audio PMSE bands.

The BBC asks Ofcom to ensure that the UK's position for WRC-27 on AI 1.12 explicitly protects the 1880-1900 MHz range for continued DECT use. Production talkback has migrated to this band precisely because PMSE users were encouraged to free up UHF spectrum for microphones and IEMs - a migration that Ofcom's own Call for Input identifies as a positive development. If protection for DECT at WRC-27 cannot be secured, Ofcom should identify and make available alternative spectrum suitable for production talkback before the band's status changes. The UK should also work with other CEPT administrations where DECT-based production talkback is similarly established, to build support for the continued availability of this band for PMSE purposes.

(c) **Video PMSE Use around 2 GHz:** WRC-27 Agenda Items 1.12, 1.13 and 1.14 have in scope various frequency bands around 2 GHz, ranging from 1.880 GHz to 2.690 GHz. Data supplied by Ofcom to accompany this Call for Input show that video PMSE makes use of frequencies across this range (see figures in Question 3). Ofcom needs to consider the impact of these WRC-27 Agenda Items on the 2 GHz video PMSE band.

(d) **Video PMSE Use in the 7 GHz band:** Section 5.50 of the Call for Input mentions the potential impact of WRC-27 Agenda Item 1.7 on the 7 GHz frequency band used by video PMSE, specifically the possible identification of the band for IMT. This band

has been identified by the GSMA[13] as a candidate for an additional band for mobile use. Of the three bands under consideration under AI 1.7, the 7 GHz band is the one where most observers expect an identification for IMT to be made. As this band was previously identified by Ofcom as the primary video PMSE band in the UK, it is possible reallocation to IMT services is of great concern. As shown in the figures accompanying our answer to Question 3, WRC-27 AI 1.7 covers almost all of the frequency range used for video PMSE, with the remainder (below 7.250 GHz) being subject to the separate decision on use of the upper 6 GHz band. The BBC notes the April 2026 proposal from Ofcom[14] to give five years' notice to remove PMSE from the band between 7.110 and 7.125 GHz, with the assertion that "there is sufficient bandwidth in the rest of the 7 GHz band to meet PMSE demand". While this appears to be the case based on current use, the risk posed to the remainder of the band by identification to IMT at WRC-27 cannot be overstated. The loss of this spectrum for video PMSE would have a very serious impact on our ability to capture content for a wide variety of live events. Ofcom should carefully consider the potential impact on PMSE before making any decisions on alternative future uses of this band.

3. Future Spectrum for Audio PMSE: We therefore urge Ofcom to consider, as part of its planning for any transition in the 470-694 MHz band, the following specific measures: first, that before any decision is taken on the future allocation of the 600 MHz band is made available to IMT, a rigorous study is undertaken of the capability of the remaining UHF spectrum to accommodate current and future PMSE needs; and secondly, to work with CEPT partners to secure as much harmonisation as possible for PMSE spectrum within Europe, to aid economies of scale and to help to stimulate supply chains, and to explore novel means by which any PMSE allocation can be secured in the international regulatory framework.

4. Future Spectrum for Video PMSE: The BBC is very concerned about the impact of either of the WRC-27 agenda items on video PMSE when taken separately, but taken together, their impact on spectrum availability for video PMSE could be catastrophic. This is particularly the case given changes in availability because of the impending use of the upper 6 GHz band for IMT and Wi-Fi. Early indications from Ofcom's WRC preparations suggest that the UK may be inclined to support new allocations or identifications under one or more of these agenda items, and it is important that these

[13] Ibid.
[14] Ofcom: Consultation: Expanding access to the 6 GHz band - Our approach to future mobile use in high density areas and incumbent users (April 2026) https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/expanding-access-to-the-6-ghz-band-approach-to-future-mobile-use-and-incumbent-users

positions give full consideration to the impact on video PMSE use in the UK. Priority must be given to mitigating any impact on PMSE before deciding if the bands are viable for new services. The BBC believes that Ofcom must reach a view on the long-term spectrum to be made available for video PMSE in advance of positions being finalised for WRC-27.

Conclusions:

The BBC therefore asks Ofcom to commit to three things.:

- First, that Ofcom develops a long-term spectrum strategy for PMSE that explicitly accounts for the likely evolution of the wider spectrum landscape , including the future of DTT distribution and demand/lobbying from the mobile industry, rather than treating PMSE planning as separate from broader spectrum policy.
- Second, that as Ofcom develops is positions for WRC-27/31, that they are informed by a clear assessment of spectrum requirements for both audio and video PMSE, including in a post-DTT environment.
- Third, that Ofcom establishes routine, regular dialogue with the PMSE sector, including on planning for any evolution of current frequency bands and opportunities to increase spectrum supply for PMSE, so that the industry can invest and adapt with confidence rather than facing a series of uncoordinated spectrum decisions.

Access to sufficient suitable audio and video PMSE spectrum is essential for both the BBC's operations and the health and growth of the UK's broader cultural and creative economy. In the BBC's view, PMSE spectrum is indispensable to meeting Government's target to the increase annual investment in the Creative Industries from £17 billion to £31 billion by 2035[15]. This Call for Input is an important step in ensuring that continued spectrum access is secured in the face of competing pressures on spectrum use. Given our view that demand for PMSE spectrum will continue to increase, we urge Ofcom to focus particularly on the supply-side issues we have identified in this response.

Please tell us how you came across this consultation.

[15] UK Government The UK's Modern Industrial Strategy – Creative Industries Sector Plan https://assets.publishing.service.gov.uk/media/68920e22dc6688ed50878479/industrial_strategy_creative_industries_sector_plan_accessible.pdf

☐ 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