

## **British Entertainment Industry Radio Group (BEIRG)**

### **Response to consultation ‘Developing a framework for the long term future of UHF spectrum bands IV and V’**

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## **Introduction**

The British Entertainment Industry Radio Group (BEIRG) is an independent, not-for-profit organisation that works for the benefit of all those who produce, distribute and ultimately consume content made using radio spectrum in the UK. Productions that depend on radio spectrum include TV, film, sport, theatre, music, newsgathering, political and corporate events, and many others. In the context of the Digital Dividend Review (DDR), BEIRG campaigns for the maintenance of Programme Making and Special Events (PMSE) access to sufficient quantity of interference-free spectrum.

The PMSE sector is a key component of the British entertainment industry. PMSE users form an essential component of this industry which contributes over £15 billion annually to the UK economy. The sector relies upon wireless equipment such as microphones, in-ear monitors, talk back and instrument systems. These wireless technologies are used extensively in the production of entertainment content.

Over the last 50 years such technologies have been utilised in television and radio content production. However, increasingly high levels of audio quality and ease of use has led to their deployment across a much wider array of event production. Theatres, film, broadcasting and live sports events all rely on PMSE equipment to produce much of their content. The London Olympics in 2012 will require the largest ever PMSE use of spectrum in Britain to broadcast live content across the world.

Radio microphones, in-ear monitor systems and talkback applications operate within the frequency bands reserved UK-wide for analogue television broadcasts. Analogue terrestrial television signals in the UK are currently being 'switched off' and replaced with digital signals as part of the 'Digital Switchover' (DSO). Some frequencies that were used for analogue television broadcasts will not be used for digital television broadcasts and are said to have been 'freed up' by the DSO. However, those frequency bands being 'freed up' also have the vast majority of radio microphones and a significant percentage of in-ear monitors (IEMs) operating in their bands. All PMSE equipment that operates in these bands will either be rendered entirely redundant (unusable) or require extensive expensive modification as a result of these changes.

As BEIRG has continually stressed throughout the Digital Switchover process, while being a disparate and varied industry, the PMSE sector is responsible for delivering cultural, social and economic benefits to British consumers and citizens. BEIRG believes that any long-term future framework should seek to avoid disrupting the operating environment of this industry any further. Any future consideration of a framework for UHF bands IV and V must give equal weighting to the culture, social and economic benefits which existing users bring, as well as any projected financial windfall from a further auction. BEIRG suggests that the perceived benefits from the deployment of mobile broadband should be offset by recognition of what is already delivered by PMSE.

## **Context: PMSE, the Digital Switchover and White Spaces**

The clearance of PMSE from the 800 MHz band has already caused a great deal of disruption to the entertainment industry, and has had a high financial cost. This clearance resulted in the removal of PMSE users from channel 69, which had for many years been the primary channel for UK-wide operation of PMSE equipment. From 2012, PMSE users will use channel 38 as their new dedicated 8MHz national channel, however PMSE users have also lost all access to the white space in the 800MHz band. At present it remains unclear whether there will be sufficient spectrum availability for PMSE post-DSO. BEIRG has serious concerns about Ofcom's findings in their statement '*Future Access to Interleaved Spectrum for Programme Making and Special Events*' (published 16<sup>th</sup> May 2011) in which they state that there will be sufficient access to interleaved spectrum for PMSE post-DSO.<sup>1</sup> The presumption of the document appears to be that if DTT is not suffering interference, then there is sufficient access to interleaved spectrum. The lack of access available is unacceptable in BEIRG's opinion.

Any future move to reallocate spectrum usage in UHF bands IV and V would be severely disruptive to an already hard-pressed PMSE industry. While this consultation stresses broadcast television as the primary user of UHF spectrum bands IV and V, it fails to make any reference to the significant demand that PMSE use has on these bands. PMSE uses frequencies across both UHF bands IV and V. PMSE users do not only operate in one channel, but also rely on 'white spaces' between TV broadcasts. The continually increasing size of events, and consequently increasing size of production, means access to the interleaved spectrum is essential to PMSE operation. This demand will only continue to increase. Any consideration of the long-term future of UHF spectrum must take into account the increasing demand that PMSE usage has on such spectrum, which is driven by high consumer demand.

Although subject to high demand, the PMSE sector is a disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. If Ofcom decides to sell-off further UHF spectrum, then Ofcom must continue to acknowledge the inability of the PMSE sector to compete at auction. The PMSE sector neither possesses the financial resources, nor has a mechanism to coordinate bidding for the collective needs of this community.

The auctioning of further UHF spectrum to a third party would severely disadvantage the PMSE sector, and could lead to market failure. Those likely to acquire spectrum released from UHF bands IV and V would operate markedly different business models and differ in the way they use spectrum from PMSE users. TV broadcast use of spectrum is one of the few spectrum users that allows PMSE users to access white spaces. Future buyers of spectrum, such as telecoms companies, could not make this white space available, and PMSE would be prevented from meeting the demands of consumers.

Until the fate of UHF Bands IV and V have been decided, there must be no further moves towards selling off the lower cleared band (600MHz). In the event that the 700 MHz band is earmarked for auction, and PMSE is cleared from this band, PMSE must be granted access to the 600MHz band. Without this access, the PMSE industry would be without access to spectrum, which is essential to its ability to produce world-class content.

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<sup>1</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/bandmanager09/statement/pmse-future-access.pdf>

Ofcom must acknowledge then that removal of broadcast television from these bands will result in the destruction of PMSE use of wireless equipment. Any future framework which diminishes PMSE spectrum access through further spectrum release would seriously damage the entire Entertainment Industry. Future re-structuring of UHF bands IV and V which further restricts PMSE's access to spectrum will deal a significant blow to consumers of British entertainment content, citizens and the wider British economy.

## Consultation Response

1. This is the British Entertainment Industry Radio Group's response to Ofcom's consultation '*Developing a framework for the long term future of UHF spectrum bands IV and V*'.
2. BEIRG understands that it is Ofcom's duty to promote the efficient use of spectrum, whilst also ensuring that decisions taken provide the greatest benefit to citizens and consumers. With both these duties in mind, BEIRG believes that a further deterioration of the quantity of interference-free spectrum available to the PMSE industry would severely harm the interests of citizens and consumers. BEIRG believes that Ofcom would best fulfil its duties by ensuring that PMSE users maintain sufficient access to UHF spectrum.
3. On a daily basis the PMSE industry is responsible for the production of content that receives world-wide acclaim and attracts global audiences. A vast array of organisations are reliant on radio spectrum for the production of content for performing arts, broadcasting, news gathering, independent film and TV production, corporate events, concerts, night venues and sports events. Other sectors that utilise the current UHF spectrum include the National Health Service, education, local government, and conferencing. All parts of this important industry have a major impact on the daily lives of the entire UK population.
4. Wireless PMSE technologies also play a vital role in helping to improve security and safety levels within the entertainment industry and other sectors. Their benefits include improving the management of electrical safety, the reduction of noise levels, the development of safety in communications and reducing trip hazards as well as providing an essential tool for the security orientated services. Wireless equipment and the spectrum it operates in are now crucial to the British entertainment industry.
5. The spectrum available to this valuable industry has already been significantly reduced as a result of the Digital Dividend Review. As BEIRG has demonstrated in its responses to the cleared and geographic consultations, Ofcom's previous white space maps show that there will be insufficient spectrum available in order to operate necessary quantities of PMSE equipment for large-scale musical productions to be staged at certain prime venues across the UK<sup>2</sup>, including at theatres in Edinburgh, Bradford, Southend, Woking, Swansea, Nottingham, Stoke, Guildford and Tunbridge Wells.<sup>3</sup> In addition, and as our models derived from Ofcom's data show, equipment costs for touring theatre will increase by a minimum of 100% post-DSO<sup>4</sup> due to the increased fragmentation of available spectrum. Ofcom published an updated version of this statement on 16<sup>th</sup> May 2011.<sup>5</sup> BEIRG's initial findings suggest that there will still be insufficient quantity of white space available across the UK for PMSE post-DSO.

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<sup>2</sup> Working on the basis that a large-scale production requires over 50 MHz of interference-free spectrum to operate its wireless microphones, in-ear monitor systems and wireless communications

<sup>3</sup> <http://www.ofcom.org.uk/consult/condocs/ddrinterleaved/responses/beirg.pdf> section 1.1

<sup>4</sup> <http://www.ofcom.org.uk/consult/condocs/clearedaward/responses/beirg.pdf>

<sup>5</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/bandmanager09/statement/pmse-future-access.pdf>

## 6. Demand and supply of services

- 6.1 Ofcom's call for input asserts that *"we will consider the services that can be delivered to consumers and citizens using UHF spectrum...And the potential citizen demand for such services"*.<sup>6</sup> As part of this, Ofcom should seriously consider the extensive existing consumer demand for PMSE content production.
- 6.2 Demand for content produced using PMSE equipment is wide and varied. Wireless microphones are used extensively in many large scale events, even in cases where their usage is not immediately obvious to consumers. For example, theatres, live sports events, live television broadcasts, film production, music performances all demand increasing use of PMSE equipment. Increasing demand is also coming from places of religious worship, schools and political conferences. Consumers are demanding increasing levels of production values which require considerable access to spectrum. For example, a popular Saturday night entertainment show can use 80+ channels.
- 6.3 Demand for PMSE derived content is already starting to outstrip supply, and is only likely to increase in the future. During the Digital Switchover, PMSE users have seen their access to spectrum severely diminished as the entire 800MHz band is set for sale. The current dividing line established by the DSO has already greatly reduced PMSE spectrum access. In BEIRG's response to the consultation on the release of the DDR cleared spectrum, we argued the 'digital interleaved' and channel 69 will not provide sufficient spectrum availability to cater for current and anticipated levels of PMSE demand post-DSO. This reduced access would make it more difficult for PMSE professionals to continue to produce world class content across the United Kingdom. Large-scale PMSE productions such as musicals and live music events will be impossible to stage in many prime locations across the UK post-DSO. Further information on specific locations is available in Annex 1.
- 6.4 Once DSO is completed across the UK, the PMSE sector will depend much more on the interleaved spectrum for use of wireless microphones and IEMs which provides a greatly reduced range of channels than were available in the 'analogue interleaved'. Ofcom's plans to introduce White Space Devices (WSD) puts access to the interleaved at even greater risk. The introduction of WSD is likely to diminish further the quality of spectrum to which PMSE users have access. As BEIRG has stated in previous consultations<sup>7</sup>, the introduction of WSDs carries with it a significant risk of interference to existing licensed PMSE users of spectrum. The introduction of WSDs, if not carefully controlled, hold the potential to diminish PMSE professionals' ability to provide content as it is essential that PMSE equipment has access to clean, interference-free spectrum. In order for wireless microphones to fulfil their intended purpose, it is absolutely essential their usage is free from harmful inference.
- 6.5 WSDs are particularly dangerous as they have the potential to interfere with PMSE content production at source. For PMSE users such as theatres, live TV broadcasts, live music and large political and industrial events, such interference would be

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<sup>6</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/uhf-spectrum-band/summary2/condoc.pdf> p.4

<sup>7</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/geolocation/responses/beirg.pdf>

disastrous. Interference with PMSE equipment at the forefront of the production chain would not only destroy the performance, but also any downstream revenue generation.

- 6.6 The continued assertion that these devices will not cause interference is based on the assumption that all WSDs will operate correctly at all times and that any which do not can be located and disabled. Furthermore there is the presumption that any malfunction will be apparent to the user, which in practice it may not be. Being inherently a transmitting device any WSD has the capability to cause interference by inadvertently transmitting on a frequency or frequencies which it should not be using and there is no reason why the user of the device would be aware that this was happening. Under most circumstances such a device could go unnoticed for a considerable period of time. However it only takes one such device, in a stadium crowd of 50,000, to disrupt a live event such an extent that it must be abandoned.
- 6.7 When considering the long-term future of the framework for UHF spectrum then, Ofcom must take into account the fact that the PMSE industry is already facing significant constraints as a result of the DSO and Ofcom's plans to introduce WSDs to UHF spectrum. Consumer demand is increasing rapidly while PMSE access to spectrum continues to decrease. Any potential future decisions by Ofcom to release further UHF spectrum to auction would only exacerbate this problem, and lead to the long-term devastation of the industry.

## **7. Technological Developments**

- 7.1 Unlike other technologies, wireless microphones do not have the capability to move to platforms other than radio spectrum. Whereas television broadcasts may potentially be able to be broadcast online in the longer-term, PMSE equipment cannot function on any platform other than clean, interference-free UHF spectrum. Currently there is only a limited pool of PMSE equipment that operates outside the UHF spectrum, due to the cost of developing and producing such equipment.
- 7.2 The PMSE sector, especially its manufacturers, are progressive and forward thinking, and are committed to ensuring greater spectral efficiency and frequency agility in the future. However, there are incontrovertible reasons why to date they have not been able to achieve this, including a lack of long term stability to justify investment. The overriding demand for PMSE equipment is the fundamental ability to ensure audio quality, reliability and flexibility of equipment. In order to produce new technology the manufacturers must be able to deliver new products that, as well as guaranteeing spectral efficiency and reliability, must also deliver the same high level of audio quality that the industry and the public demand. Whilst manufacturers have invested, and continue to invest, heavily in developing new technologies, UHF spectrum remains the most stable and efficient platform for PMSE equipment.
- 7.3 Moreover, even in the event that broadcasting was to move to other means of delivery other than UHF spectrum, Ofcom must recognise the mutually re-enforcing nature of television broadcast and PMSE content. Even if television broadcast was able to move to an alternative platform, it would still need to produce live content for broadcast using PMSE equipment. Without PMSE access to spectrum, British

consumers would not be able to watch many of the live television broadcasts or shows currently available. Ofcom must recognise that any long-term framework would require the PMSE industry to retain sufficient access to UHF spectrum, even if technological developments permitted broadcasting to move elsewhere.

## 8. International Developments

8.1 BEIRG believes that any future decisions Ofcom takes on harmonisation should be conducted alongside the relevant European bodies. PMSE users were subject to additional disruption, prior to their eviction from channel 69, as a result of Ofcom's haste in developing policy alone. Any future framework should be developed with Europe to ensure that a repeat of the Channel 69 u-turn does not occur.

8.2 Regardless, a harmonisation of mobile services in the 700 MHz band would not be in the interests of consumers or citizens. BEIRG is extremely concerned about the possibility that the 700MHz band could be used for telecommunications as this would remove PMSE access to interleaved spectrum. BEIRG believes that Ofcom should work with European partners to garner support for harmonisation of broadcast in the 700MHz band across Europe. This would be the best means of ensuring that PMSE users retain access to spectrum. Without such access, the PMSE industry will be unable to continue to meet consumer demand for live entertainment content.

## 9. Benefits to Citizens and Consumers

9.1 In 1.15 Ofcom assert that "*they will consider the benefits different services operating in the UHF spectrum can bring to citizens and consumers*"<sup>8</sup>. PMSE already offers discernable financial, social and culture benefits to both groups.

9.2 The British entertainment industry is worth over £15 billion a year to the British economy, and PMSE plays a significant role in producing the content which raises this revenue. Consumer demand for theatres, music performances and festivals, as well as live sports events has a significant impact on the British economy. This demand has grown exponentially in the last two decades, and PMSE content production remains integral to delivering these events. A 2007 report by The Work Foundation on behalf of the Department for Culture, Media and Sport suggested that economically the British Entertainment sector was as valuable to Britain as the financial services sector.<sup>9</sup>

9.3 The West End of London, which uses PMSE equipment to produce much of its content, attracts visitors from all over Britain and tourists from across the world. The current estimated annual turnover of the West End is £500 million, and it receives around 15 million visitors a year. Including downstream revenue such as merchandise, the estimated economic impact is £1.5 billion. Similarly, music festivals and live music concerts also contribute a significant amount to the British economy. In 2005 it was estimated that Glastonbury Festivals impact on the local economy could be over £50 million, including the £750,000 employer's income tax bill for the

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<sup>8</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/uhf-spectrum-band/summary2/condoc.pdf>

<sup>9</sup> Staying Ahead: The economic performance of the UK's creative industries, July 2007

1,100 people employed.<sup>10</sup> Glastonbury is only one of hundreds of music festivals which currently take place annually in the UK.

9.4 A May 2011 Study by Bournemouth University's International Centre for Tourism and Hospitality Research showed the live UK music events in 2009 made a positive contribution to the UK economy of £864m.<sup>11</sup>

9.5 PMSE equipment is also used extensively in many popular Saturday night talent television programmes, some of which attract over 18 million viewers. The formats for these shows have also been successfully sold around the world. The associated revenue with these shows is enormous, much of which would not be possible without the use of PMSE equipment.

9.6 Throughout the entertainment sector, PMSE technology is responsible for producing the source material for many events. Any reduction in the amount of available spectrum for PMSE would significantly hinder the British entertainment industry's revenue streams. If a music venue or theatre venue is unable to put on a show, then any ticket, merchandise, and associated revenue and employment would disappear. Any future reduction to the amount of spectrum PMSE currently has available to it would also risk jettisoning future investment. Without sufficient access to spectrum for wireless microphones, live content production qualities would return to levels seen in the 1970's. The United Kingdom would thus face a real disadvantage in attracting internationally prestigious entertainment events, such as the U2 tour, the Olympics or the MTV Europe music awards.

9.7 As well as this significant financial input there are significant cultural benefits to citizens provided by Britain's diverse entertainment sector. The British entertainment industry is valued culturally by many across Britain, and its world renowned status helps to attract tourists to Britain from all around the world.

9.8 When considering a long-term framework for UHF spectrum, Ofcom must acknowledge PMSE's integral role in producing much of the economic, cultural and social benefits that the British Entertainment sector delivers to citizens and consumers.

## 10. Future Timescales

10.1 Many licenced PMSE users have already faced significant disruption to their businesses, having been forced to buy new equipment as part of their eviction from channel 69 to 38. Such users have been forced to replace equipment which still had a significant working life. Funding of only 55% of the value of this equipment has led to financial strain in many cases. At an absolute minimum, any future plans for UHF bands IV and V should not be considered until after the replacement equipment PMSE users have had to purchase to operate in channel 38 has reached the end of its lifespan.

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<sup>10</sup> *Live Music Forum: Findings and Recommendations*, DCMS, 2007

<sup>11</sup> <http://www.ukmusic.org/assets/media/UK%20Music%20-Music%20Tourism.pdf>

- 10.2 If there is to be any future restructuring, Ofcom must provide a timetable for spectrum release that is long enough to allow the manufacturing industry to produce, in sufficient quantity, equipment capable of utilising any newly available frequencies in such a way that does not disrupt PMSE production. It would take 20 years for a user organisation such as a rental company or broadcaster to build up an inventory of stock capable of accessing 'digital' interleaved spectrum to match current levels.
- 10.3 Ofcom must ensure that PMSE users are given considerably more warning than they received for their eviction from channel 69, if a move were to take place. Ofcom must also give immediate notice of where PMSE would be moved to once they were told of any changes to UHF bands IV and V. Ofcom must also allow time for manufacturers to develop products to work in alternative frequencies. If such products are unavailable and PMSE equipment is only capable of functioning in UHF bands IV and V, then no further adjustments to frequency assignments should be considered.
- 10.4 Until a decision is made on the future of UHF bands IV and V, Ofcom must postpone the auctioning of the 'lower cleared band'. If the 700MHz and 600MHz bands were no longer accessible for PMSE use, the industry would be unable to continue to produce its content which is exported around the world.

## **11. Conclusion**

- 11.1 Any future framework for UHF bands IV and V should aim to retain PMSE's current access to UHF spectrum, if not improve them to enable the industry to meet increasing demand. At present there isn't the equivalent technology to justify the removal of PMSE users from UHF spectrum.
- 11.2 Access to UHF spectrum must not simply be the retaining of one channel (channel 38) for PMSE users, but should also provide continued access to the interleaved spectrum. At wireless intensive events PMSE users do not have sufficient spectrum access to meet consumer demand at present, and any future policy framework that reduces access to the interleaved spectrum between television broadcasts would further lessen PMSE's ability to meet this increasing demand. As a result BEIRG believes that Ofcom should work towards harmonisation of the "700MHz band" for broadcast use only. Until a decision is made on the fate of the 700MHz band, BEIRG believes Ofcom must postpone any disposal of the 600MHz band to ensure that PMSE will continue to have access to UHF spectrum.
- 11.3 A framework which further diminishes PMSE access to UHF spectrum will deal significant damage to the PMSE industry, if not completely destroy it. If the PMSE industry is not able to meet continuing demand for live entertainment content there will not only be a significant economic loss to a £15bn industry, but there will also be the loss of cultural and social benefits which British citizens currently value.