

**Musicians'  
Union**



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### **MU response to the Ofcom Review - Developing a framework for the long term future of UHF spectrum bands IV and V**

1. The Musicians' Union (MU) welcomes the opportunity to respond to this review into intellectual property and growth. We represent over 30,000 musicians working in all genres of music. As well as negotiating on behalf of our members with all the major employers in the industry, we also offer a range of services tailored for the self-employed by providing assistance for professional and student musicians of all ages.
2. We would like to support the British Entertainment Industry Radio Group (BEIRG) submission, particularly the following points.
3. We understand 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, we believe 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. We believe that Ofcom would best fulfil its duties by ensuring that PMSE users maintain sufficient access to UHF spectrum.
4. 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.
5. 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

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orientated services. Wireless equipment and the spectrum it operates in are now crucial to the British entertainment industry.

6. 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. BEIRG's initial findings suggest that there will still be insufficient quantity of white space available across the UK for PMSE post-DSO.
7. 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". As part of this, Ofcom should seriously consider the extensive existing consumer demand for PMSE content production.
8. 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.
9. 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, they argued that 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.
10. 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, 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.

11. 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 disastrous. Interference with PMSE equipment at the forefront of the production chain would not only destroy the performance, but also any downstream revenue generation.
12. 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.
13. 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.
14. 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.
15. 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.
16. Moreover, even in the event that broadcasting was to move to other means of delivery other than UHF spectrum, Ofcom must recognise the mutually reinforcing 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.

17. Many licensed 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.
18. 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.
19. 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.
20. 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.
21. 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.
22. 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, the MU agrees with BEIRG, 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, we believe

that Ofcom must postpone any disposal of the 600MHz band to ensure that PMSE will continue to have access to UHF spectrum.

23. 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. It will also seriously impact on the work of MU members.