

Digital Dividend Review

Programme Making and Special Events (PMSE)

Pro User Group:

Consultation Submission

Date: Friday 16th March 2007

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Executive Summary

1. The disparate and diverse PMSE sector possesses neither the financial resources nor the mechanism for coordinating a bid for its spectrum requirements. Therefore it cannot take part in an auction system.
2. Even if it could do so, the PMSE sector would lose to rival bidders with deeper pockets.
3. The PMSE Pro User Group proposes that the frequencies needed for PMSE activities be gifted to a single band manager independent of, but paying an annual fee to, Ofcom. The single band manager would then license usage for the frequencies used by the PMSE sector.
4. The proposed date for the termination of the PMSE's transitional spectrum arrangements should be extended from 2012 to 2025.
5. Channel 69 should not be deregulated.

The PMSE Pro User Group - DDR Consultation Submission

The PMSE Pro User Group

Who are we?

The Programme Making and Special Events (PMSE) sector is a disparate, diverse and diffuse community of content producers, manufacturers, rental organisations and freelance engineers. The PMSE sector is responsible for both content production and content delivery for live and recorded entertainment. It plays a critical role in the ongoing success of the £15 billion pa British Entertainment Industry. The PMSE Pro User Group represents over 150,000 industry professionals working within the PMSE sector.

The PMSE Pro User Group includes individuals and associate members from the PMSE sector such as:

ABTT- Association of British Theatre Technicians
AMPS- Association of Motion Picture Sound
APRS – Association of Professional Recording Services
BECTU- Broadcasting Entertainment Cinematograph and Theatre Union
BEIRG- British Entertainment Industry Radio Group
CPA – Concert Promoters Association
EQUITY- The British Actors Union
IBS- Institute of Broadcast Sound
MU- Musicians Union
MIA – Music Industries Association
NODA- National Operatic and Drama Association
PACT- Producers Alliance for Cinema and Television
PLASA- Professional Lighting and Sound Association
PSA- Production Services Association
SOLT- Society of London Theatres
TMA- Theatrical Management Association

What do we do?

The PMSE sector is critical to the production of content for live entertainment of all genres. This sector extensively utilises wireless equipment such as Wireless Microphones, Wireless In-Ear Monitor Systems, Wireless Talk Back Systems and Wireless Instrument Systems.

For over fifty years wireless products have been used in the entertainment industry. In the past thirty years there have been vast improvements in production value and safety levels as a result of advances in wireless technology.

How do we do it?

The PMSE sector currently relies on the spectrum interleaved between existing TV broadcasts to enable the use of Radio Microphones, In-Ear Devices and other short-range wireless devices. This equipment is an essential component of the British Entertainment Industry.

The PMSE Pro User Group - DDR Consultation Submission

Who benefits from our activities?

On a daily basis this sector is responsible for the production of content that has received world-wide acclaim and continues to attract a global audience. 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**. In addition, other sectors that utilise the current UHF spectrum include the Health Service, Education, Local Government, Political Programming and Conferencing.

In addition these technologies 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 on are now crucial to the British Entertainment Industry. **All parts of this important industry have a major impact on the daily lives of the entire UK population.**

Just one example of this contribution would be the UK's theatre industry. However this is only one facet of the much broader contribution that the PMSE sector makes every year to the unusually diverse British Entertainment Industry. A study by Dominic Shellard, of the University of Sheffield, published as recently as April 2004 (Theatre Impact on UK Economy - Economic Impact Study of UK Theatre), highlighted the considerable social and economic value of the theatre market alone:

***Theatre has a huge economic impact: £2.6bn annually.** This is a conservative figure. It does not include, for instance, the impact of touring theatre companies or non building-based theatre activity.*

Theatre makes a considerable contribution to local economies, both in terms of direct spending on goods and services and in terms of visitor spending.

***Theatre activity outside London has an economic impact of £1.1bn annually.** By attracting audience members who undertake spending on food, transport and childcare, theatres make a significant contribution to their local economies. Audience members spend an average of £7.77 per person on food, transport and childcare when they visit a UK theatre outside the West End.*

***The economic importance of West End theatre to the UK is clear – it contributes £1.5bn pa.** Audience members spend an average of £53.77 per person on food, transport and childcare when they visit a West End theatre.*

Employment

A sample of 259 UK based theatres showed that they employ 6,274 people on a full-time basis and offer 5,700 part-time contracts.

***Theatre is a popular area for volunteering.** There are at least 16,000 volunteers working in UK theatres.*

Consultation Submission Key Points

1. It is unanimously agreed by the PMSE Pro User Group that it is impossible for the PMSE sector to enter a spectrum auction for spectrum release.
 - i) Ofcom must acknowledge the inability of the PMSE sector to compete at auction. The PMSE sector is a disparate, diverse and diffuse community of content producers, manufacturers and rental organisations. Many of its members are extremely small and there is no way they could compete at auction. They possess neither the financial resources nor is there a mechanism to coordinate bidding for the collective needs of this community. The PMSE sector encompasses many different spectrum users. Last year spectrum managers JFMG recorded applications from over 600 organisations and individuals for spectrum usage, which resulted in 32,000 individual spectrum assignments (excluding Channel 69). These may range from large high end spectrum users such as TV broadcasters, London Theatres or live events to much smaller local community users.
 - ii) The PMSE sector feels that for them, an auction mechanism for the release of spectrum is deeply flawed. Even if the sector were able to find a means for entering a spectrum auction, an auction system is in itself totally unacceptable. By engaging in an auction, the PMSE sector would be initiating a process that would lead to market failure. It is the PMSE Pro User Group's genuine belief that the PMSE sector could not be successful in securing spectrum at auction. Therefore the industry would be without access to a critical component of content production. Without access to spectrum, the industry could not operate at current levels, leading to severe damage to the functioning of the British Entertainment Industry.
 - iii) The likelihood of the PMSE sector losing in an auction process is only made more certain by any increase in the value of the likely bid. Ofcom's supposition that this spectrum is likely to be of only limited value is undermined by both a letter from Dell Ltd regarding spectrum's value and by the Vodafone RSPG Public Consultation document on the implications of the Digital Dividend. Additionally, at the Westminster eForum held at The Brit Oval on 28th February 2007 a consultant contracted to Microsoft publicly stated that Microsoft saw **"huge potential in the 'white spaces'"** i.e. interleaved spectrum. Particular geographic areas in the U.K. (such as Greater London) are especially spectrum-constrained.

The PMSE Pro User Group - DDR Consultation Submission

The PMSE Pro User Group believes that auctioning spectrum without restriction to a third party could also severely disadvantage the PMSE sector, and could itself initiate a process that could lead to market failure. The potential participants in an auction base their bids on completely different business models. Unlike for instance mobile phone companies (and to a lesser extent local TV stations), many professional PMSE users cannot buy spectrum in advance because of shifting demands by their customers (e.g. concert tours and sporting events). They therefore write the costs off over many years. The PMSE sector is already using these bands successfully. The burden of proof is on any new users to show that their business plans will work and not lead to instances of market drop-out, as in the wake of the European 3G auctions.

- iv) The PMSE Pro User Group disagrees with Ofcom that transaction costs for professional PMSE users would not be significant (DDR *Annex 8.111*). Unlike the mobile industry for instance, professional PMSE users are not able to pay “opportunity costs ... to fund the purchase of spectrum in a market-based environment” (DDR *Annex 8.113*). This problem is exacerbated by the fact that each PMSE user is interested in the use of the spectrum within an extremely small area such as a theatre, production studio or sports arena as compared to a mobile service company which would be providing a service over the entire licensed area. It is simply impractical for all PMSE users to join together to bid for the same spectrum (with each individual PMSE user having access to the spectrum within its particular location) due to the disparate interests and very large number of PMSE users. For these same reasons the current licensing arrangements through a single band manager have worked well, as they have permitted intensive reuse of the same spectrum by individual PMSE users that are geographically separated by the minimum distances required to avoid interference.
- v) As a result, professional PMSE will be pushed out of the existing bands by more financially powerful players who are able to pass these costs on to their customers. The Analysys Report (*Annex E, p. 33*) states clearly: “At the downstream level, PMSE service provision appears to be competitive and characterised by low barriers to entry. This means that service providers are unable to extract much of the private value from PMSE downstream users.” Also for these reasons auctions affecting the PMSE users will inevitably lead to market failure.
- vi) The PMSE Pro User Group therefore proposes the concept of the ‘gifting’ of spectrum on an annual rental basis to a single band manager. This band manager would be committed to the needs of the PMSE sector and competent to manage interleaved spectrum. It would be independent of Ofcom, and Ofcom would not therefore be responsible for the organisation or charging of authorised spectrum usage by the PMSE sector, as these responsibilities would pass to the single band manager. The band manager would be charged with licensing the usage of frequencies used by Local TV and the PMSE sector.

The PMSE Pro User Group - DDR Consultation Submission

- vii) In addition the PMSE Pro User Group advocates that channels 67 and 68 be held back for PMSE use, and gifted and managed as set out in *Key Point 1 vi*. Provided there is sufficient co-ordination and management of all users and that PMSE is allowed primary rights, there is also considerable potential opportunity for band sharing between PMSE and other lower powered users such as Local Television. This would lead to more efficient spectrum use on a lower power basis. As to the value to society, PMSE and managed coordinated lower power users would enjoy 100% national coverage giving this use of the spectrum immense social value.

2. Current Ofcom estimates as to the value of the equipment currently used by the PMSE sector are wildly inaccurate.

- i) The suggestion by Ofcom that there is at present around £10 million worth of equipment that would become redundant as part of the DDR, is wrong and underestimates the figure by at least a factor of five. One single medium sized rental company, **Autograph Sound Recording**, alone has around £7 million worth of potentially affected equipment.

In the last ten years just between the two manufacturers **Sennheiser** and **Shure**, the estimated amount of professional equipment that could be affected (i.e. not channel 69) is approximately £25 million. This figure would certainly increase to well over £30 million when other manufacturers' products are considered. It should be remembered that this particular type of equipment has to be built with rock-solid reliability as it is destined for use in the most hostile professional environments, such as in theatre, broadcast and high level live touring applications where lost time due to unreliable equipment can be extremely costly.

Currently there are around 180,000 wireless units which utilise this spectrum, used at 45,000 different events ranging from those on a small scale using just one single frequency, to much larger live events, which excluding unique events such as the Olympics, might use up to 240 frequencies. There is also a growing trend in live entertainment towards much larger live events which require greater frequency capacity. On average most typical professional live events will use between 16 and 30 TV channels. For example the 2007 Brit Awards, held at Earls Court, used Wireless Microphones, Wireless In-Ear Monitor Systems, Wireless Talk Back Systems and Wireless Instrument Systems in 27 different UHF TV channels, as well as other types of systems elsewhere in the radio spectrum.

- ii) One of the consequences of these calculations is that Ofcom have drawn together an unrealistic account of the ability of and time needed for the PMSE sector to adapt to proposed changes. Instead the PMSE sector must be given sufficient time that would fairly allow them to amortize the value of current equipment that will become redundant under current plans. In addition due consideration must be given to the fact that a considerable amount of this equipment will be unsuitable for upgrading due to the restrictions imposed by the RoHS directive.

The PMSE Pro User Group - DDR Consultation Submission

- iii) The PMSE sector especially its manufacturers, are completely 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. The overriding demand from an operational level is driven by the fundamental need to ensure audio quality, reliability and the flexibility of equipment. In order to produce new technology the manufacturers must be able to deliver new products which, as well as guaranteeing spectral efficiency and reliability must also deliver the same high level audio quality that the industry and the public demand.
- iv) This means that a reasonable time frame that allows the PMSE sector to move to new technologies, has to be built into the way in which the industry is enabled access to enough flexible and usable spectrum. The current cut-off date of 2012 is simply unworkable, and in order to develop and disseminate these technologies, the PMSE Pro User Group suggests that a time frame of 2025 will be required. The Analysys Report supports this conclusion: ***“[T]here could be concerns that the professional PMSE community may struggle in the short term to reform their business model to the point where they can realize a greater proportion of the value chain in the likely event that the cost of accessing UHF spectrum rises ...” (p. 55).***
- v) Ofcom also needs to acknowledge that even equipment for which full depreciation has taken place, continues to hold value within the industry because of the longevity of the equipment itself and the rental nature of part of the PMSE sector. This means that equipment filters down through the industry. The proposed changes would abruptly end the life cycle of this equipment by making it entirely redundant.
- vi) Ofcom needs to provide a timetable for spectrum release that is long enough to allow the manufacturing industry to produce in sufficient quantity, equipment capable of utilising newly available frequencies in such a way as does not disrupt their production. It would take between 10 and 15 years for a user organisation such as a rental company or broadcaster to build up an inventory of stock to match current levels. Therefore for them 2025 is a more appropriate date to complete the transitional period of the DDR.
- vii) Whilst manufacturers have invested, and continue to invest heavily in developing new technologies the earliest conceivable date to complete this transition would almost certainly adhere to the following timetable. It is the PMSE Pro User Group’s considered opinion that there would be a further development lead in time for new equipment of at least 3 years from now, followed by a further 7 years for market penetration, and then in addition a further period for the equipments life span. This would constitute a minimum period of 10 years for professional usage, and for all that total 20 year period (3+7+10 years), there would have to be the certainty of defined spectrum availability.

3. De-regulated Channel 69.

The PMSE Pro User Group believes there are three fundamental points to consider about Channel 69.

- a) It is the only UK wide TV band available for PMSE use
- b) Its users constitute a large proportion of smaller professional PMSE spectrum users
- c) If it were deregulated the possibility exists that manufacturers could choose to stretch the definition of what constitutes a radio microphone, and as a consequence the bands used for professional PMSE use would become dominated by non PMSE equipment.

As a consequence the PMSE Pro User Group is opposed to the deregulation of Channel 69 because existing PMSE needs, as well as those of amateur users require interference-free use of spectrum. If the PMSE sector uses a deregulated Channel 69 for professional use it is certain that sound production will suffer from interference. Consequently it is an absolute fundamental that the spectrum used by the PMSE community is licensed and coordinated by a single band manager. As Analysys states in their report, there will be a ***“be a uniquely strong demand from a PMSE band manager for this specific channel [69], owing to the high level of existing PMSE use in this channel [69]. Aggregating this channel with other channels would therefore unduly discriminate against PMSE bidders.”*** (p. 76).

The PMSE Pro User Group - DDR Consultation Submission

Questions:

The PMSE Pro User Group recognises the significance of the difference between cleared and digital interleaved spectrum, and as such our response has two elements. Answers to questions are dependent on which part of the spectrum is under discussion

1. This executive summary sets out Ofcom's proposals for the release of the digital dividend. Do you agree with these proposals?

The PMSE Pro User Group recognises the principals on which the DDR proposals have been made, but for the PMSE sector, it fundamentally disagrees with the proposed methods of implementation in so far as it affects them.

2. Do you have any comments on our analysis of the essential constraints that will apply to the available UHF spectrum?

The PMSE Pro User Group can only answer the question for the PMSE sector. The PMSE Pro User Group believes the quality of the research undertaken is deficient and hence the conclusions drawn are questionable. For instance analysis of the value of equipment that would become redundant is incorrect. (See *Key Point 2, i*) The PMSE Pro User Group also disputes Ofcom's suggestion that at auction this spectrum is unlikely to be of interest to many bidders. We suggest that letters from Dell Ltd and Vodafone together with public statements from consultants contracted to Microsoft contradict this. (See *Key Point 1, iii*). Moreover, Ofcom's distinction between PMSE "professional use" vis-à-vis "community use" leads to further uncertainties in the market because it is unclear which PMSE users fall into which category.

3. Do you agree with the more detailed analysis and proposals regarding these technical constraints as set out in Annex 10?

The PMSE Pro User Group believes there are a number of additional points that need to be made with regard to the analysis in *Annex 10* in relation to PMSE use of the UHF spectrum.

The PMSE Pro User Group does not believe that the problem of interference to PMSE services in the UHF spectrum from other services has been adequately considered.

The issue of Adjacent Channel Interference to DTT reception from other services is discussed in *Annex 10.11*. However the issue of adjacent channel interference to PMSE receivers and the impact on the PMSE sector's future use of the interleaved spectrum is not studied. Clearly any future use of any part of the UHF spectrum will have an impact on PMSE equipment in neighbouring channels whether in the interleaved or cleared spectrum.

The PMSE Pro User Group - DDR Consultation Submission

The issue of Image Channel Interference to DTT reception from other services is discussed in *Annex 10.13*. However the issue of Image Channel Interference to PMSE receivers and the impact on the PMSE sector's future use of the interleaved spectrum was not studied. Whilst we appreciate that it is difficult to plan comprehensively for Image Channel Interference to PMSE equipment because of the many different IF frequencies in use by different types of PMSE equipment, and consequently the many different image frequencies, we do believe that this is an area that requires further study.

Similarly the adjacent channel rejection of different brands and models of PMSE equipment varies quite widely. In many respects the technical reports do not differentiate between the many different quality levels of PMSE equipment available.

With reference to *Annex10.14*, it is impractical for PMSE users to share frequencies with any type of portable device that uses an in-band uplink. Such devices would present a serious risk of interference to PMSE receiving equipment. Due to their low power operations and exacting standard for sound transmission quality, PMSE equipment is extremely susceptible to interference from other sources. For example, wireless microphones typically operate at 10 mW. To achieve the audio quality required for television and sound production as well as for theatre, a minimum 100 dB signal-to-noise ratio is required throughout the duration of the programme. These high standards expected by consumers and audiences must be considered when developing rules to protect the PMSE user community from interference. We do not believe that there is any practical way to manage this risk. Such interference would be very costly to the PMSE sector and would dangerously undermine the high level of confidence that exists internationally in the UK PMSE industry's technical capabilities.

We note that sections *Annex10.83 – Annex10.85*, which refer specifically to the PMSE sector only take account of the potential for interference from PMSE to DTT. No attempt appears to have been made to quantify the potential for interference to PMSE from adjacent channel DTT. We do however welcome Ofcom's conclusion that PMSE services are compatible with the planned DTT services subject to suitable co-ordination (*Annex10.136*).

The PMSE Pro User Group suggests that any additional interleaved broadcast services (*Annex10.137*) will adversely affect the capacity of the interleaved spectrum to support PMSE activities. The conclusions drawn elsewhere in the DDR regarding the ability of the interleaved spectrum to supply the PMSE sector's needs do not, we believe, take this into account.

With reference to *Annex10.141 & 142*, we agree that there is a need for continuing co-ordination of PMSE activities in the UHF spectrum as currently carried out by a single band manager. The need for co-ordination will be even greater during both this transitional period and then following the DSO than it is at present. Ongoing coordination is essential if the PMSE sector is to continue to thrive in the UK.

Regarding future uses of the Cleared spectrum we note that in *Annex 10.143* there is no mention of the PMSE sector's continuing extensive usage of TV channels 36 and 38 on a secondary basis, although this is mentioned elsewhere (e.g. *Annex 11.40*). We are aware of the need to protect the primary users of these channels from harmful co-channel and adjacent channel interference. We believe a continuation of the current practice of co-ordinated use of channels 36, 37, 38 and 39 by PMSE users, will offer the necessary protection from other potential high-powered services to Radio Astronomy and Radar.

4. Do you have any comments on Ofcom's assessment of the potential uses of this spectrum? Are there any potential uses which should be considered that are not mentioned in this document?

The PMSE Pro User Group believes Ofcom has covered many important potential uses of spectrum in the consultation. However we believe Ofcom has significantly underestimated the likely interest in some of those uses in the interleaved spectrum. For the interleaved spectrum the PMSE Pro User Group would suggest the potential uses of this spectrum are considerable. The PMSE Pro User Group would cite both a letter from Dell Ltd and the Vodafone RSPG Public Consultation document on the implications of the Digital Dividend as evidence of the likelihood of interest in this spectrum, interests that are not included in the Ofcom document. The PMSE Pro User Group suggests that the number of potential users is underestimated by the Ofcom document and that in the event that an auction system is established to award the release of spectrum utilised by the PMSE sector, that there would be considerable interest in acquiring this spectrum. (*See Key Point 1, iii*). The PMSE sector is also concerned that some of this interest would be for the speculative use of this spectrum. In contrast the PMSE's requirements are well established. They have accrued 'grandfather rights' over a thirty year period, and now form a critical component of the British Entertainment Industry.

The PMSE Pro User Group also suggests that whilst Ofcom has covered many spectrum uses it has inadequately recognised that rather than remaining constant or decreasing, the spectrum use of the PMSE sector is likely to increase in the foreseeable future (beyond 2012). This increase will occur despite potential gains in spectral efficiency. The Tour de France, the Commonwealth Games and even more so the 2012 London Olympics are all examples of prestigious international events whose success is dependent on reliable PMSE applications. Companies will not invest in new PMSE equipment for these events if they do not know whether they can use their equipment in determined frequency bands beyond 2012.

5. Do you have any comments on our analysis of the choice between a market-led and an interventionist approach to the release of this spectrum? Do you agree with the analysis of different mechanisms for intervening to remedy potential market failures?

The PMSE Pro User Group would suggest that market led and interventionist approaches are not mutually exclusive. We feel that a solution lies between the two, and that this question seeks to polarise positions. There is a median position. This will permit some spectrum to be auctioned for other uses. For the PMSE sector a value could be placed on the interleaved spectrum. (See *Key Point 1, v*) We believe the 'one size fits all' auction proposals in the Ofcom document will precipitate market failure; consequently we have suggested an extension of transitional arrangements from 2012 until 2025. We also suggest that a system of 'gifting' of spectrum on an annual rental be established, and have evidenced the likely market failure that would result from the auction process for PMSE spectrum usage.

In addition to the suggestions in *Key Point 1, v* in relation to interleaved spectrum, the PMSE Pro User Group also advocates that channels 67 and 68 should be reserved for PMSE use on a similar basis as outlined in *Key Point 1, vi*. This would provide several advantages as it would allow three TV bands of contiguous spectrum that could be used nationwide. This proposal would therefore address the lack of spectrum that is available on a national basis. (See *Key Point 3*). It would also address a significant part of the problem of the legacy of redundant equipment. Furthermore it would also act as a buffer to the Channel 69, community usage as well as recognising the potential shortage of spectrum available in the digital interleaved spectrum.

6. Do you agree with our proposals to continue making available channel 69 for use by low power PMSE devices? Do you agree with our proposal to make some or all of the spectrum available for use on a license-exempt basis?

The PMSE Pro User Group agrees with proposals to continue making channel 69 available for PMSE usage in keeping with current practice. The PMSE Pro User Group advocates keeping the majority of channel 69 usage coordinated and licensed (See *Key Point 3*) and to give up the distinction between "professional users" and "community users". There are many unresolved issues with regard to what it means to be a "community user". The Ofcom Consultation document offers little in the way of interference protection from unlicensed devices allowed to operate in the UHF bands. Having PMSE for "Professional Use" and PMSE for unlicensed use in the same band (e.g. in Channel 69) will compromise the use of this band by high-demand end users that usually require significant cleared bandwidth.

- 7. Do you agree that there should be transitional protection for professional PMSE users to ensure that they can continue to access interleaved capacity until at least the end of 2012? Do you have any views on the mechanism for providing future access to this spectrum?**

The PMSE Pro User Group supports the idea that there should be transitional protection for professional PMSE users, but does not agree that 2012 is a suitable date to end such protection. The PMSE Pro User Group advocates the extension of transitional arrangements until at least 2025. The PMSE Pro User Group suggests that a single band manager be established, that is independent of Ofcom, and that becomes responsible for the organisation, charging and coordination of authorised spectrum usage by the PMSE sector (*See Key Point 1, v*).

- 8. Do you consider that additional spectrum from the digital dividend should be reserved for low power applications? If so, please provide as much evidence as possible about the nature of the application and its potential value to society.**

Uncoordinated usage of Low Power devices, as defined in the Ofcom Digital Dividend Review- *low power applications and innovation* (DDR 6.107, p.80), which includes devices such as home wireless networks, radio frequency identification (RFID) and wireless “last mile” broadband devices are in the opinion of the PMSE Pro User Group incompatible with PMSE operations due to the high interference risk that they present to the PMSE. As we explained earlier, due to their low power operations and exacting standards for sound transmission quality, PMSE equipment is extremely susceptible to interference from other sources. For example wireless microphones typically operate at 10 mW. To achieve the audio quality required for television and sound production as well as for theatre, a minimum 100 dB signal-to-noise ratio is required throughout the duration of the programme. These high standards expected by consumers and audiences make it impossible to have uncoordinated usage of Low Power devices in the same bands as PMSE equipment.

- 9. Do you consider that it would be desirable to hold back some spectrum from award with a view to its potential use for future innovation? If so, please provide comments on how much spectrum should be held back, and for how long.**

The PMSE Pro User Group agrees that it is desirable to hold back some spectrum from award with a view to its potential use in the future. The PMSE Pro User Group suggests that it is important to hold back spectrum from award until the requirements of the Digital Switchover are more fully understood. The PMSE Pro User Group also suggests that in holding some spectrum back from award it would create a ‘spectrum buffer’ for the future, which has the potential to be used as a reserve for very large live events. However the PMSE Pro User Group is opposed to elevating the interests of a future possibility above those of existing services. As stated above, the “burden of proof” is on the new applications to evidence that they work and actually bring significant benefits to end users.

10. Do you agree with our proposal that we should package the interleaved spectrum in a way that would be suitable for use by local television services, but not reserve spectrum solely for its use?

The PMSE Pro User Group suggests that a single band manager should license the PMSE sector and is therefore not in favour of spectrum specifically reserved for local television.

11. Do you agree with our proposal to package the spectrum in a way which does not preclude mobile broadband use, but to take no further action in relation to this use?

The PMSE Pro User Group believes that provided mobile broadband use is neither in the same nor adjacent television channels as those used by the PMSE sector, that coexistence with mobile broadband services would not be a problem. However, the PMSE Pro User Group is clear that it would object to any mobile broadband use either in the same or adjacent television channels as those used by the PMSE sector. This is due to the inevitable co-channel or adjacent channel interference that would occur as a result.

12. Do you agree with our proposal that we should not intervene in the award of this spectrum to reserve spectrum for DTT? Do you agree that we should package the spectrum in a way which is suitable for the DTT use?

The PMSE Pro User Group understands this question to apply to the cleared spectrum. Within the confines of the DDR the amount of spectrum is finite and in so far as reserving further spectrum for DTT will reduce the availability of all other users, the PMSE Pro User Group is opposed to such proposals.

13. Do you consider that we have included in our analysis the most material risks in relation to market failure?

The PMSE Pro User Group believes that analysis as it stands overlooks a number of important features regarding the most material risks of market failure. The PMSE Pro User Group is able to quote verbatim Ofcom Chief Executive Ed Richards in a letter to Peter Luff MP, Chairman of the Commons Trade and Industry Select Committee where he states that Ofcom's analysis ***"has not identified anything intrinsic to the nature of professional PMSE use that would preclude a bid that reflected its value"***. The PMSE Pro User Group is clear in its disagreement with this statement and would refer Ofcom to previous points (See Key Point 1 i, to v). The PMSE Pro User Group is also clear in its belief that unless the proposed timetable for support granted to the PMSE sector during the DSO is extended to the more realistic date of at least 2025, the difficulties facing the PMSE sector will inevitably lead to market failure (See Key Point 2, iii, v).

14. Do you agree with our proposal to auction licences for the use of the available UHF spectrum?

Whilst the PMSE Pro User Group recognises that auctions are one mechanism for allocating spectrum, for the reasons explained above (See *Key Point 1 i to v*), we do not believe that auctions are suitable for the PMSE sector.

15. Do you agree with Ofcom's proposals as to the timing of any auction? If not, what alternative proposal would you make and why, and what evidence and analysis can you provide in support of your alternative proposal?

The PMSE Pro User Group does not support Ofcom's proposals as to the timing of any auction in so far as it affects the PMSE sector. They believe that for them any auction system is in itself flawed and is an impossible mechanism for the PMSE sector to engage in. Furthermore the PMSE Pro User Group suggests that the impact of Ofcom's timetable for the Digital Switchover on the PMSE sector will be damaging and would advocate extended transitional arrangements that remain in place until 2025, when there will be a clearer idea of the ramifications of the Digital Switchover (See *Key Points 2, iii, iv, v*).

16. Do you have any views on which of the packaging options identified for the cleared spectrum would be most suitable?

The PMSE Pro User Group believes that until there is greater clarity as to the capacity of digital interleaved spectrum and of its availability to the PMSE sector, it is unable to comment on the PMSE's requirement for cleared spectrum packaging.

17. Do you have any views on which of the packaging options identified for the interleaved spectrum would be most suitable?

The PMSE Pro User Group believes that until it is clear how useable the interleaved spectrum will be, it is difficult to identify the best packaging option. Given that the PMSE demand for spectrum will increase, there must be guarantees in place for PMSE sector to use the "interleaved" spectrum. In particular anything which could result in there being more than one "band manager" for UHF PMSE spectrum would be extremely unsatisfactory. We believe that having more than one "supplier" of UHF spectrum will be in no way beneficial to professional PMSE users, and will only serve to complicate operations, confuse users and introduce new and unnecessary delay and costs to content production. Because of the essential tuning range constraints of PMSE equipment, having two apparently competing "band managers" with different frequency ranges would only give the illusion of competition since a user with equipment in one frequency range would be restricted in their choice of supplier. The inherent geographical constraints of interleaved spectrum would further constrain PMSE users and only serve to prevent actual competition. Many PMSE users have previous experience of the uneven playing field that can result from having two (competing) band managers in the UK (ASP Frequency Management and JFMG). Whilst the concept of secondary markets and trading between different band managers may be attractive to economists and accountants the practical effect is not helpful to the PMSE sector.

18. Do you have any views on which of the auction design options would be most suitable?

The PMSE Pro User Group feels it has made it quite clear that the disparate, diverse and diffuse nature of the PMSE sector makes it impossible that this industry could enter an auction system for the release of spectrum. Therefore we have no view on auction design options.

19. Do you agree with Ofcom's proposals for the non-technical terms of the licences to be awarded for use of the UHF spectrum?

The lack of clarity in Ofcom's Digital Dividend Review- *proposed licence terms* (DDR 11.32 p.132), makes it impossible for the PMSE Pro User Group to provide a coherent answer.

20. Do you agree with the analysis of the options as set out in this Impact Assessment?

The PMSE Pro User Group has no comment on this question.