

Spectrum Planning for London 2012 Olympic Games and Paralympic Games

British Entertainment Industry Radio Group (BEIRG):

Response to Discussion document

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The British Entertainment Industry Radio Group (BEIRG) is submitting this document to Ofcom on behalf of the PMSE Pro User Group. ‘Programme Making and Special Events’, in this context, refers to: (1) professional wireless microphone systems, (2) professional in-ear monitor systems and (3) talkback systems¹. In view of the sectors that are incorporated into the BEIRG organisation and their corresponding expertise, BEIRG is constrained as to which questions it can answer.

Introduction

BEIRG welcomes Ofcom’s decision to start the task of spectrum planning for the 2012 Olympics so far in advance of the event. As Ofcom appreciates, this makes accurate assessment of the spectrum requirements more difficult to make. However, it is quite clear that the scope and scale of the 2012 Olympics’ radio frequency allocation project will be unprecedented.

BEIRG notes that there are essentially four components to the surge in spectrum requirement associated with the 2012 Olympics:

1. **The Groundswell:** production of live and recorded entertainment including the Performing Arts, Broadcasting, News Gathering, Film and Independent Production, Corporate Events, Concerts, Night Venues and Sports Events not directly related to the Olympics – these events will require spectrum access for wireless microphones, in-ear monitor systems and talkback. Indeed, the influx of visitors will increase the base level of PMSE demand before the Olympics and Cultural Olympiad are taken into account.
2. **The Cultural Olympiad:** although the mandatory ceremonial events will represent the peak in terms of both spectrum requirements and risk of interference, the cultural Olympiad lasts for four years and the activities will be focused on live sites across the UK, each of which will have significant spectrum requirements.
3. **The Olympic Games:** whilst BEIRG understands that the Olympic Broadcasting Services (OBS) will capture the live feeds of all sporting events and make them available to the Rights-Holding Broadcasters (RHBs), much of the live and recorded content production will not involve the events but rather commentary on and reaction to them (including live interviews), which the participating countries will expect in their native languages.
4. **Health and Safety/Security services**

Approach and assumptions

Question 1: Do you have any comments on our approach?

BEIRG notes that Ofcom continually asks how spectrum requirements can be met most efficiently. Whilst efficiency is to be applauded, effectiveness is essential.

BEIRG notes Ofcom’s Top-down approach and utilization of information gained from comparable events to make judgments about spectrum requirements. Whilst it is possible to partially transpose one onto another, Ofcom must take into account that each distinct

¹ For a more extensive definition of PMSE and description of the contribution this sector makes to the UK, please see the PMSE Pro User Group response to Ofcom’s consultation on Programme Making and Special Events p. 11-12 <http://www.ofcom.org.uk/consult/condocs/pmse/responses/ProUserGroup.pdf>

area has its own particular set of problems with regard to spectrum demand and provision. London, for instance, is especially spectrally congested.

Ofcom must consider the historical increase in PMSE spectrum demand from 2004-2008 and extrapolate that figure as a De minimis addition to apply to 2012.

BEIRG believes that Ofcom has not sufficiently emphasized the fact that the 2012 Olympics and associated events, whilst concentrated in London, will be taking place across the UK and that spectrum will be required to cater for all of these events countrywide. The requirements for each venue must be assessed individually. For example, BEIRG is concerned that termination of PMSE access to the cleared spectrum as DSO takes place in the Westcountry region (2009) will leave insufficient spectrum to cater for demand at the sailing events in Portland.

BEIRG is concerned that Ofcom has not adequately considered high-power wireless microphones, which are often used to overcome range restrictions caused by working amongst crowds. High-power systems, which impinge much more on adjacent spectrum, must be managed carefully.

Question 2: Do you have any comments on our assumptions?

3.15.18 test events will have comparable spectrum requirements to events at the Games

BEIRG believes that this assumption is wrong. The test events will not be able to simulate the spectrum requirements for content production at the Olympics for many reasons. For instance, the test events will not take into account local broadcasters or the influx of ENG crews. An 'event' involves much more than the Olympic Broadcasting Services.

3.15.19 new technologies for use at the Games will need to be proven by the time of LOCOG's technology freeze in 2010

The 2010 technology freeze makes it even more imperative that PMSE access to the 'cleared' spectrum is retained until after the Olympics in 2012. The technology freeze makes it even more unlikely that sufficient spectrally-efficient equipment that can operate in the new PMSE reservation will be developed in time to cater for the requirements of the 2012 Olympics. The technology freeze also makes it even more unlikely that digital wireless microphones will be useable for the production of the 2012 Games. How do Ofcom propose that the technology freeze be policed?

3.15.20 cultural events will not require spectrum before the Games.

BEIRG presumes that Ofcom is referring to the 'Cultural Olympiad' rather than 'cultural events' more generally. BEIRG would like Ofcom to explain how this assumption aligns with their statement in point 6.6 of this document which states that *'Many activities will be focused on some 60 live sites...in London and across the UK. These will operate throughout the four years of the Cultural Olympiad, increasing in number over that period in the run-up to 2012. They will have specific spectrum requirements for wireless microphones, point-to-point and satellite links and other wireless communications'*².

Question 7: Do you think that digital wireless microphones will be widely used by the time

² This statement is contained in the 'mandatory ceremonial events' section

of the London Games?

No. Digital wireless microphone technology is in its infancy. It is rendered even more unlikely by the 2010 technology freeze; digital wireless microphones certainly will not be used extensively within this 2-year time frame.

Question 8a: What is your assessment of the requirements for wireless microphones?

The proliferation of wireless technology, the ever-expanding audience and locus of the time zone means that the London 2012 Olympics is likely to be the most globally-consumed live event the world has ever seen and will involve unprecedented requirements for wireless microphones. The suitability of GMT for live broadcast across the globe will heighten the demand for live feeds (relative to previous Olympics). In turn, this will increase the demand for analogue wireless microphones, which are currently superior to their digital counterparts due to latency issues.

The most effective way of ascertaining the requirements of wireless microphones is through consultation with the host, rights holders and other visiting organisations. Whilst the actual events will be produced and broadcast by the host, a vast array of bodies will require spectrum in and around the venues for content production in their native language. The number of rights holders having an interest in each event will vary depending on national preference.

Ofcom must not assume that an in-ear monitor system will sit seamlessly side-by-side with a wireless microphone system.

Ofcom must take into account the disparity between theoretical and real-world scenarios with regard to spectrum planning. In situations where spectrum is scarce and the risk of harmful interference is high, content producers usually carry spare sets of wireless equipment so they can migrate into other channels (ideally adjacent) when problems occur. The knock-on effects of this unplanned migration cause problems for users operating in these channels. The practicalities of content production in saturated spectrum mean that more bands must be allocated to wireless microphones and in-ear monitors than theory might suggest.

The sailing events at Weymouth and Portland will require significant amounts of spectrum for wireless microphones because:

- 1) They are being held outside
- 2) There are numerous countries that have a deep interest in the sport
- 3) Interviews and similar types of production will take place on land

Electronic Newsgathering devices (ENG)s, which, for example, are used to follow road-races, usually accommodate two wireless microphones.

Question 8b: How can they be met most efficiently?

It is essential that whichever body responsible for allocating spectrum has a deep understanding, including hands-on experience, of spectrum usage by broadcasters and other interested parties.

PMSE users need access to Channels 31-35, 37-40 and 63-68 as well as the 'digital' interleaved and Channel 69 in order to cater for the requirements of the 2012 Olympics,

including the sailing events at Weymouth and Portland and the Cultural Olympiad across the UK. Therefore, PMSE access to channels 31-37 and 39-40 and 63-68 must be retained until after the Paralympics in 2012, irrespective of when auctions for the 'cleared' spectrum take place and licenses are awarded.

As well as ensuring a sufficient amount of spectrum, this will ensure that sufficient quantities of equipment are available, as the vast majority of equipment currently in the market is designed to work across 31-37, 39-40 and 63-68. If PMSE access to the cleared spectrum is terminated before the Olympics in London, then millions of pounds worth of PMSE equipment, which could otherwise be used for production of the Olympics throughout the UK, would be rendered redundant.

Furthermore, the technology freeze in 2010 makes it even more unlikely that sufficient spectrally-efficient equipment that can operate in the new PMSE reservation (the 'digital interleaved') will be developed in time to cater for the requirements of the 2012 Olympics.

Question 9: How do you think developments in audio technology will affect spectrum requirements?

There are two aspects to how developments in audio technology might affect spectrum requirements:

- 1) Spectrum efficiency
- 2) Digital wireless microphones

In view of the two-year timeframe for development of new technology before the 'freeze' in 2010, it is extremely unlikely that there will be significant advances in spectrum efficiency of PMSE equipment.

Question 10a: What is your assessment of the requirements for in-ear monitors?

The most effective way of ascertaining the requirements of in-ear monitors is through consultation with the host, rights holders and other visiting organisations.

In-ear monitors are increasingly considered to be an indispensable aid to the modern-day presenter and the use of in-ear monitor systems is likely to expand. .

Typically, in-ear monitors and radio microphones are separated into different areas of spectrum, this is to prevent interference caused to radio microphones by in-ear monitor receiver packs that have a propensity to radiate as well as receive Rf.

Question 10b: How can they be met most efficiently?

It is essential that whichever body which will be responsible for allocating spectrum has a deep understanding, including hands-on experience, of spectrum usage by broadcasters and other interested parties.

PMSE users need access to Channels 31-35, 37-40 and 63-68 as well as the digital interleaved and Channel 69 in order to cater for the requirements of the 2012 Olympics, including the sailing events at Weymouth and Portland and the Cultural Olympiad across the UK. Therefore, PMSE access to channels 31-37 and 39-40 and 63-68 must be retained, at least in London, until after the Paralympics in 2012, no matter when auctions for the 'cleared' spectrum takes place and licenses are awarded.

As well as ensuring a sufficient amount of spectrum, this will ensure that sufficient equipment is available, as the vast majority of equipment currently in the market is designed to work across 31-37, 39-40 and 63-68. If PMSE access to the cleared spectrum is terminated before the Olympics in London, then millions of pounds worth of PMSE equipment, which could otherwise be used for production of the Olympics, would be rendered redundant.

Furthermore, the technology freeze in 2010 makes it even more unlikely that sufficient spectrally-efficient equipment that can operate in the new PMSE reservation (the 'digital interleaved') will be developed in time to cater for the requirements of the 2012 Olympics.

Question 11a: What is your assessment of the requirements for talkback?

It is essential for presenters and support staff to have good communications at all times. This will necessitate 1 high-power in-ear monitor or wide band constant-transmit talkback (cue programme). This is a facility that will enable presenters to research stories while still hearing content from other sources.

Demand will be high because the various sectors within each broadcasting production company require their own independent channel (e.g. lighting, sound, TV, radio).

Question 11b: How can they be met most efficiently?

It is essential that whichever body responsible for allocating spectrum has a deep understanding, including hands-on experience, of spectrum usage by broadcasters and other interested parties. This must involve proper coordination and proactive policing.

Question 14a: What is your assessment of the requirements for wireless cameras?

It is feasible that radio cameras may require associated use of wireless microphones on a local basis.

Question 15: How do you think the use of HD will affect spectrum requirements? If yes, please provide details.

. The received audio quality must match the HD video quality.

Question 16a: What is your assessment of the requirements for point-to-point links?

If the point-to-point links are fixed then they could be adequately covered by fibre-optic cable. If the point-to-point links are mobile then they are likely to be significant.

Question 17: How do you think spectrum could be used more efficiently?

Whilst efficient use of spectrum is to be applauded, effective use of spectrum is essential. It is essential that whichever body which will be responsible for allocating spectrum has a deep understanding, including hands-on experience, of spectrum usage by broadcasters and other interested parties. This must involve proper coordination and proactive policing.

Question 18a: Do you think that wireless-camera technology operating between 3 and 7.5 GHz will be more widely available by the time of the London Games?

As a general point, manufacturers will only manufacture equipment for a certain frequency if they can have guaranteed interference-free access.

Requirements for support services

Question 22: Do any public support services have spectrum requirements that cannot be met through existing allocation and assignment processes?

There must be effective spectrum coordination between PMSE and ancillary services.

Requirements for cultural events

Question 23a: What is your assessment of the requirements for cultural events?

Experience at past major events in this country and abroad indicates that interest in and demand for such events is increasing. On average most typical professional live events will use between 16 and 30 8 MHz 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. Ofcom must bear in mind that the cultural events associated with the Olympics will be taking place nationwide and sufficient spectrum availability for these events must be assured.

Question 23b: How can they be met most efficiently?

PMSE users need access to Channels 31-35, 37-40 and 63-68 as well as the digital interleaved and Channel 69 in order to cater for the requirements of the 2012 Olympics, including the sailing events at Weymouth and Portland and the Cultural Olympiad across the UK.

Notice must be given well in advance of putting the deadline of applications for spectrum allocation to enable prioritization between events.

Other Requirements

Question 24a: What is your assessment of other requirements?

There are other facilities that utilize interleaved spectrum such as data links.

Question 24b: How can they be met most efficiently?

PMSE spectrum should not be released to any peripheral event or broadcasting service for data use.

Operational issues

Question 25a: Do you have you any views on previous or possible licensing systems?

Ofcom must take into account the close proximity of the Olympic venues to those regularly licensed for PMSE. Sydney, by contrast, is a less permanently hostile RF environment.

Ofcom must take into account that the signal/noise ratio tolerated in the US is twice that of the UK.

The equipment must be of a good quality and not liable to interfere with other users.

The quality of constant-transmit (cue) and in-ear monitor systems must be of an acceptable level, ideally not compressed, to prevent damage to users' hearing on a long-term basis.

Question 25b: When should the licensing system start to accept applications?

Due to the expected high-demand and uncertainty of availability, requests of intended use by the principal rights holders and operators of the host events should be sought as soon as possible. Sufficient time is required to facilitate effective use.

It is necessary to assess demand for spectrum and which spectrum will be at a premium before allocation is possible.

Sufficient notice must be given to other RF users affected by the production of the Olympics. If they have to vacate spectrum, then they must be told well in advance. This would require coordination between the body planning spectrum for the Olympics and the commercial band manager with PMSE obligations.

Question 26: Do you have any views on enforcement?

Non rights-holders are liable to situate themselves at the venue and use wireless equipment whilst ignorant of the interference problems they may cause to legitimate users.

'Frequency police' must be present and active at each venue. There must be an equipment validation process and on-site control.

Ofcom must ensure that they are aware of the potential range of a radio microphone and police equipment accordingly.

Solutions to reception problems caused by body absorption can cause more interference problems. For example, high Rf power ratings are used to offset absorption but have potential to cause interference to others.

Imported equipment must be scrutinized. Ofcom might consider raising awareness of the issues with customs officials. Ofcom must consider the accreditation process for the equipment involved.

Other Comments

With regard to spectrum planning issues, BEIRG recommends that whichever body is responsible for allocation remains aware of spectrum activity across the English Channel.

Consideration should be given to the surge in usage of licence-free radio systems used by the print media.

Consideration must be given to the import of PMSE equipment from states in which the

white spaces are unlicensed. Clear-guidance must be given to organisations bringing in PMSE equipment from abroad.