



Response to Ofcom Consultation: Temporary assignment of UHF analogue interleaved frequencies

As the current PMSE band manager JFMG would like to thank Ofcom for the opportunity to contribute to the decisions to be taken in respect of spectrum vital to the programme-making industry. We are uniquely placed in our ability to comment on the consultation questions as we can identify the likely impact of the additional proposed services on the availability of interleaved spectrum for PMSE use.

1. Company profile

JFMG Ltd is the dedicated band manager for programme-making, entertainment, special events and related activities. It is a privately owned company created specifically to ensure continued and equitable spectrum access to all areas of the programme-making industry.

JFMG successfully coordinates the use of spectrum, issues licences and collects licence fees on behalf of Ofcom, and have done so since 1997. The spectrum we manage ranges from 47MHz to 48GHz and requires expert knowledge of the bands, their uses and restrictions. This currently includes all of the spectrum included within Ofcom's Digital Dividend Review. JFMG own bespoke tools that uniquely enable us to coordinate this spectrum, ensuring both protection for broadcasting and effective access for programme-makers.

In the UK, the professional use of radio for programme-making and entertainment purposes is referred to as Programme-Making and Special Events (PMSE). PMSE applications include:-

- Broadcast television studio production
- Broadcast television and radio coverage of news, sport or other public events including state occasions
- Theatre and touring shows (e.g. Doctor Dolittle, Cirque du Soleil)
- Music and other entertainment productions (e.g. Live8, Mandela, Glastonbury, T in the Park)
- Motor sport communications and remote monitoring (e.g. F1GP, Moto GP)
- Conferences, and corporate presentations and events
- Movie film productions

As the dedicated band manager JFMG Ltd facilitates the successful running of these events. JFMG also provide on-site consultancy services and are dedicated to leading the industry through the transitional period ahead.

1. Consultation Questions

Question 1: Do you agree that our assessment of the technical impacts of the proposal to use Channel 31 in London is appropriate?

The consultation addresses the BBC request to launch new temporary 'Multiplex B' services ahead of Digital Switchover (DSO) in certain key areas. In respect of London the proposal to use Channel 31 can cite the successful trial service which operated during 2006 under a non-operational licence. As stated in the consultation document PMSE users were considered at the time and no damaging impact was reported.

Based on the proposals we have carried out a further analysis of PMSE use of Channel 31 in London, and conclusions have been drawn on the potential impact of the new service. The transmission parameters of the proposed service have not yet been detailed but it has been assumed that they will not exceed those of the existing DTT multiplexes.

Whilst a major proportion of the programme-making industry is concentrated around London demand for Channel 31 is relatively light in comparison to other parts of the UHF interleaved spectrum. The

predominant use of the UHF interleaved spectrum by PMSE is for wireless microphones and in-ear-monitor systems. The favoured spectrum for this equipment is above Channel 50 and in London, at least for the moment, there is generally sufficient spectrum to meet demand, including for large events. The use of Channel 31 in London by PMSE is a very specific application arising from the use of a particular talkback system. Originating in the US it is only programmed with base frequencies in Channels 31, 32 and 33. The associated duplex frequencies are above Channel 50 and not impacted by these proposals. Around London Channel 33 is not available to PMSE due to analogue television services. Regardless, PMSE licensees currently using channels 31, 32 and 33 will already need to be considering alternative spectrum options when these channels are no longer available for programme making after DSO.

An analysis of talkback assignments over the past year, both temporary and ongoing, revealed over 311 assignments in Ch31 and 127 in Ch32. All but 16 in Channel 31 and two in Channel 32 were indoor assignments. Further details are given in Appendix 1. The assignments in Ch32 already coexist with co-channel DTT transmissions in the capital. As the vast majority of Channel 31 assignments are similarly indoor, it is expected that they will coexist with a new service radiating on Channel 31. On this basis little impact is expected on PMSE licensees.

Field measurements have also been made at a number of the existing locations where Channels 31 and 32 are assigned. These are detailed in Appendix 2. Given the very low levels of received DTT signals in the buildings digital levels have been scaled from analogue measurements, more reliably detected. The derived levels in a 200kHz talkback channel indicate a rise in background noise but the levels are unlikely to limit performance over typical path lengths within a building.

Question 2: Do you have any general comments which you think we should take into account?

It is not yet possible to determine the potential impact of temporary Multiplex B services on PMSE elsewhere in the UK. It is stated that the Granada region, as one of the first to switchover, is unlikely to require a temporary service. This is welcomed as Manchester and the north west of England support a significant amount of programme-making and suitable spectrum is already scarce. Other regions due to switch in 2009 and early 2010 similarly may not justify temporary services.

The consultation document indicates that London has been selected for a temporary Multiplex B service based on its high population along with its late switchover date. Based on these criteria it may be reasonable to assume that temporary services are more likely in Yorkshire, Meridian, Tyne-Tees, Central, Ulster and possibly STV. When identifying suitable channels in these regions it is likely that 'in-group' solutions will again be preferred, to maximise coverage to existing domestic receive antennas. Many of the main transmission sites in these regions radiate in UHF Band V, above Channel 39. As a consequence the identified channels are likely to fall in spectrum more heavily in demand for PMSE. The quantity of programme-making activities may not be as high as in London but the impact on individual licensees or events may be severe.

The consultation concentrates on London and a temporary Multiplex B service on Channel 31 is unlikely to cause many difficulties to PMSE. Finding suitable channels elsewhere in the country is unlikely to be as straightforward. We would therefore be happy to directly participate in the planning and decision making process and to represent programme-makers' interests.



Question 3: Do you agree with the analysis carried out for this Impact Assessment?

The Impact Assessment notes the potential impact on PMSE users. Exceptionally if alternative solutions are required JFMG would like to be involved in determining the impact to PMSE on a case by case basis. In line with the Impact Assessment we have determined that the proposed Channel 31 service in London will have only a very minor impact on PMSE users.

For the remainder of the country it is not yet possible to determine the impact of temporary Multiplex B services on PMSE users. We would therefore be very happy to help Ofcom with assessing the future impact so that this could be factored into the planning and decision making process.

Appendix 1

Analysis of Channel 31 and 32 Assignments in London

Assignments were considered within 50km of Buckingham Palace between 16th October 2007 and 16th October 2008.

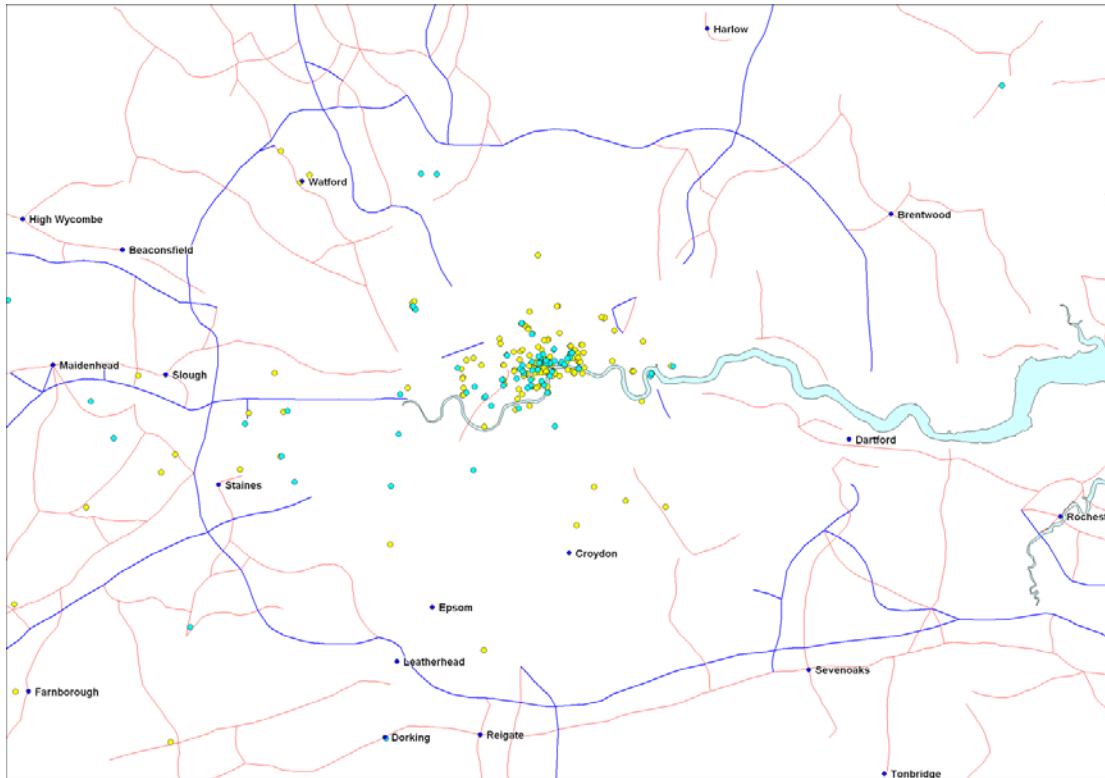


Figure 1: Assignment locations: Yellow Ch31, Blue Ch32

The assignments were a mix of wireless microphones and talkback systems, both indoor and outdoor. The greatest use is for wideband talkback systems operating in 200kHz channels. This equipment can only tune across a number of spot frequencies in channels 31, 32 and 33. In London and its vicinity Ch31 is the favoured channel as there is no DTT or analogue TV coverage to be protected or cause interference to PMSE. There is DTT on Ch32 which limits the availability outdoors but appears not to constrain indoor use. Due to analogue TV from Crystal Palace Ch33 is only available to PMSE in exceptional circumstances.

Whilst there is alternative spectrum for wireless microphones this particular talkback system is not supplied on alternative channels and there is concern that there will be a reduction in spectrum availability if a new temporary service commences on Ch31.

	All	BTR only	BTR Internal	BTR External
Ch31	466	311	295	16
Ch32	156	127	125	2

Table A1: Assignments within 50km of Buckingham Palace in the past year

These figures show that while most assignments are made in Channel 31, the vast majority of these are indoors. This is also the case for the Ch32 assignments which successfully coexist with local DTT transmissions. It can therefore be expected that virtually all indoor Ch31 assignments will continue to be compatible with a new temporary Ch31 service, assuming similar transmission parameters.

Appendix 2

Survey measurements of measured field strengths at locations of existing Channel 31 and 32 assignments

To test the presumption that wideband talkback systems can operate indoors in the presence of DTT interference a number of field strength measurements were made at locations already using a mix of Ch31 and Ch32 assignments.

	Measured ATV 1MW pk sync (dBm)	Calc DTT in a 5kW ERP 8MHz channel (dBm)	DTT in a 200kHz talkback channel (dBm)
New London Theatre			
Main Entrance	-73	-96	-112
Auditorium	-67	-90	-106
Stage Door	-68	-91	-107
Aldwych			
Auditorium	-70	-93	-109
Ground Floor	-77	-100	-116
Circle	-74	-97	-113
Stage	-77	-100	-116
Under Stage	-77	-100	-116
Dominium			
Stage Door	-73	-96	-112
Stage	-67	-90	-106
Under Stage	-77	-100	-116
Auditorium Ground Floor	-77	-100	-116
Fly Tower	-67	-90	-106
5th Floor	-67	-90	-106
ITN			
Studio 5	-67	-90	-106

Table A2: Survey Measurements and calculated terminated power in a talkback receiver

For a typical co-channel C/I protection ratio of 20dB [ERC Report 42] a wanted signal of greater than -86dBm is therefore required for reliable operation in the presence of a -106dBm interferer.

So for a 10mW ERP talkback system in Ch31:

Frequency	550	MHz	
Tx ERP	10	dBm	
Talkback Rx level	-86	dBm	
Internal building and antenna losses	-20	dB	(Estimate)
System loss	76	dB	
Free Space distance	~272	m	

Even allowing for significant additional loss inside venues and losses from practical antennas, the range of reliable operation will remain substantially more than required within the venues in the presence of DTT interference. This is as expected given the existing satisfactory performance in Ch32 in the presence of the current 20kW ERP Ch32 DTT service in London.