Response to Ofcom Consultation:
Ultra Wideband

Background

JFMG Ltd manages the spectrum allocated for use in programme making, entertainment, special events and related activities. JFMG coordinates the use of spectrum, issues licences and collects licence fees on behalf of Ofcom. JFMG has successfully managed spectrum for Ofcom (previously Radiocommunications Agency) since 1997.

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
- Music and other entertainment productions
- Conferences, and corporate presentations and events
- Movie film productions

Introduction

UK programme makers have been allocated spectrum in the frequency bands 3.4 – 3.6 GHz, 5.4 – 6.0 GHz, 7.1 – 7.5 GHz, 8.4 – 8.5 GHz and 10.3 – 10.4 GHz. All these bands fall within the proposed band of 3.1 – 10.6 GHz for Ultra Wideband (UWB) and are potentially directly affected by increased levels of interference. The main requirement of programme makers is for video links such as wireless cameras, mobile links from vehicles and temporary point-to-point links.

Programme makers also have allocations within the 2.0 – 2.3 GHz which may be affected by UWB.

Consultation Questions

JFMG wishes to comment on only those questions relevant to the PMSE sector.

Q3: Do you agree with the economic study? Are there other studies that Ofcom should be conducting?

i) JFMG is not able to agree with the economic study. In our view, the study does not satisfactorily address the cost of interference from UWB into programme making.

ii) JFMG believe that Ofcom should conduct a further study to examine the technical and cost impact on current and future PMSE use in bands from 2.0 – 10.6 GHz

Supporting comments for response to Q3:
The existing study correctly identifies the programme making sector as having a key interest in the band 3.1 to 10.6 GHz and also identifies an interference risk. It deals with the risk to PMSE according to three sub-bands:

PMSE in the band 3.4 to 3.6 GHz
The study does not assess the impact in this crucial band on the grounds that information on deployment scenarios and quantity of equipment was unavailable. In fact, typical deployment scenarios for all PMSE video links are described in a readily available ERC reference document.[1]

The study assumes that PMSE links can be considered to have similar parameters to a fixed point-to-point link and so concludes that interference would be minimal. JFMG believes that it may be too simplistic to consider that PMSE deployment in this band is analogous to the fixed link case. The main applications in the 3.5 GHz band are to provide mobility such as wireless cameras and for links from cameras on vehicles. Highly directional point-to-point links would be the exception in this band.

With a typically wide beamwidth receiver antenna, the exposure to UWB devices is likely to be greater than for a directional fixed link. Furthermore, at many types of event, PMSE receivers can be expected to be located in the midst of a potentially high density of licence-exempt interferers such as UWB. For example, at an event such as The Open golf championship, the licensed PMSE channels at 2.4 GHz compete with the full gamut of short range devices associated with the infrastructure of the event including:

- Dedicated course-wide WiFi network and palm computers for official scorers
- WiFi network for journalists in Press Office
- WiFi network for hospitality guests
- Wireless link for organiser's web cams
- Wireless CCTV surveillance for crime prevention
- Bluetooth headsets for organisers, exhibitors, traders and visitors

It is likely that a sharing study appropriate for the type of events where PMSE links are deployed would result in a less optimistic scenario.

As regards quantity of equipment, it is acknowledged that there are no readily available central records of equipment holding. Even so, the relatively small number of operators means it would be feasible to estimate with reasonable accuracy the numbers of equipment in current use. It would also be feasible to allow for the anticipated growth in demand resulting from migration out of the band 2.50 – 2.69 GHz and from the up-take of digital technology.

PMSE in the band 5 to 6 GHz
It is noted in the economic study that mitigation from interference is promised for bands between 5 – 6 GHz on the grounds that the IEEE proposals for UWB will reduce emissions in this band for compatibility with 802.11a or similar equipment. This does not appear to be consistent with the spectrum mask shown in the

[1] *ERC Report 038 Handbook on Radio Equipment and Systems - Video links for ENG/OB use*

consultation document (Figure 6.1 The proposed Ofcom revision to the ETSI UWB mask). No reduction in radiated power is indicated in the band 5-6 GHz.

PMSE in the band 6 to 10.6 GHz

It is also noted from the economic study that the risk of interference to PMSE bands above 6 GHz is discounted for "the foreseeable future". This is on the basis that initial UWB devices would only operate in the bands up to 5 GHz because of the technology constraints in the development of silicon for UWB. No timescale is indicated and this issue is not referred to in Ofcom's consultation. Since the investment lifetime for PMSE links is typically greater than 10 years, the arrival of 10GHz UWB devices in the medium term may still have significant cost impact for PMSE.

Q7: Are there any other options to consider?

JFMG supports the idea that the lower limit for UWB should be raised to 5 or preferably 6 GHz. The spectrum below 5 GHz is best suited to mobile applications.

Q8: Are there any major technical studies that we have omitted?

According to section 5.2 of the consultation document, the draft ECC report on UWB below 10.6 GHz does not appear to have considered PMSE applications. Consequently Ofcom has not evaluated the draft report in the context of PMSE video links. JFMG is not aware of any study that has considered PMSE applications.

As described in our answer to Q2 above, the deployment of video links in PMSE is unlike other radio sectors and needs to be considered according to its own parameters and unique scenarios. JFMG reiterates the need for such a study.
