

Award of available spectrum:  
10 GHz, 28 GHz, 32 GHz and 40  
GHz—10 GHz and the London  
2012 Olympic Games and  
Paralympic Games

Discussion document

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## Section 1

# Executive summary

- 1.1 Having published a consultation document in June 2006 and a discussion document in January 2007, Ofcom is considering how to proceed with awarding wireless-telegraphy licences to use the 10 GHz, 28 GHz, 32 GHz and 40 GHz bands. We plan to publish further documents in spring 2007 before making the award in summer 2007. Part of that award comprises 200 MHz of spectrum in a 10 GHz band managed by the Ministry of Defence (MOD).
- 1.2 London will host the Olympic Games and Paralympic Games between July and September 2012. While many venues are located in London itself, others are elsewhere in Great Britain. Test events will start in 2010. Ofcom is meeting Government guarantees, made as part of London's bid, to organise a full spectrum plan for the Games and to make spectrum available to members of the Olympic family without charge. We are working closely with the Government and the London Organising Committee of the Olympic Games and Paralympic Games (LOCOG) and expect to consult on a draft spectrum plan for the London Games in summer 2007.
- 1.3 Spectrum at 10 GHz is suitable for video links and wireless cameras. We are not yet in a position to conclude whether bands other than the spectrum available for award at 10 GHz could satisfy demand from the London Games for these uses, but we want to meet the current timescales for awarding the band. We therefore need to let potential bidders know the implications of making the band available for the Games as this could have a bearing on their approach to the award. This document sets out our options and proposes a licence condition.
- 1.4 Given the extensive consultation to date on awarding spectrum at 10 GHz and the desirability of meeting the current timescales for that award, we are seeking comments from stakeholders by 12 April 2007.

## Section 2

# Background

## Award of spectrum at 10 GHz

- 2.1 We published a consultation document<sup>1</sup> on 29 June 2006 setting out our detailed proposals for awarding wireless-telegraphy licences to use the 10 GHz, 28 GHz, 32 GHz and 40 GHz bands. In the light of comments made in response to these proposals, we published a discussion document<sup>2</sup> on 11 January 2007 with some changes, including revised packaging of the spectrum at 10 GHz, inclusion of the spectrum at 40 GHz in the award and awarding licences by a combinatorial clock auction. We held a public seminar on 30 January 2007 to present these further proposals. The deadline for comments on the document was 8 February 2007.
- 2.2 We are currently considering comments received, including those made at the public seminar. We will publish a statement setting out our decisions on all matters relating to the award of these bands that will take account of all comments made on our proposals since the June 2006 consultation. At the same time, we will publish further details of our plans for the award, specifically the Information Memorandum and the proposed auction Regulations. Our aim is to publish these documents in spring 2007. We are planning for the award to take place in summer 2007.
- 2.3 The key elements of our proposals, including the modifications proposed in the January 2007 discussion document, are as follows:
- we will hold an auction in 2007 for the award of UK wireless-telegraphy licences to use the 10 GHz, 28 GHz, 32 GHz and 40 GHz bands;
  - the auction will take the form of a combinatorial clock auction;
  - the lots to be auctioned will be mainly for UK coverage, but three lots at 28 GHz will have varying degrees of geographic coverage;
  - the spectrum available at 10 GHz will be offered in 10 2×10 MHz lots, and, in order to reduce coordination requirements, bids will have to be for at least two lots;
  - the licences will have an indefinite term with a minimum period of 15 years, during which our powers to revoke will be limited;
  - the licences will be tradable; and
  - the licences will be technology and application neutral.
- 2.4 The available spectrum at 10 GHz is part of the wider 9.5-10.5 GHz band managed by the MOD. By agreement with the MOD, 10.125-10.225 GHz paired with 10.475-10.575 GHz has been available since 1998 for radio fixed access point-to-multipoint systems. The MOD has agreed that the band may in future be used for other fixed systems and wireless cameras. This is the spectrum covered by the award.

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<sup>1</sup> Available from [http://www.ofcom.org.uk/consult/condocs/10ghz/spec\\_condoc.pdf](http://www.ofcom.org.uk/consult/condocs/10ghz/spec_condoc.pdf).

<sup>2</sup> Available from <http://www.ofcom.org.uk/consult/condocs/10-40GHz/10-40ghz.pdf>.

## The London 2012 Olympic Games and Paralympic Games

2.5 On 6 July 2005, London was chosen to host the Games of the XXX Olympiad, which will take place between 27 July and 9 September 2012. The Olympic Park will be built on a 500-acre site in the Lower Lea Valley, while Wembley Stadium, the All England Lawn Tennis and Croquet Club, Lord's Cricket Ground, Greenwich Park, Regent's Park, Hyde Park and Horse Guards Parade will also host events in London. The Eton College Rowing Centre at Dorney Lake, Weymouth Bay and Portland Harbour and five other football grounds—Hampden Park, the Millennium Stadium, Old Trafford, St. James' Park and Villa Park—make up the remaining venues.

2.6 As well as the Games themselves, test events will take place at Weymouth Portland in 2010 and at other venues during 2011 and into 2012.

2.7 Guarantee 15.8 of London's bid for the Games stated that:

By early planning and understanding all the frequency requirements (including broadcasters, teams, organisers, policy, security and emergency services etc.), Ofcom will organise a full frequency plan for the Games and will arrange all the spectrum licences in good time in support of the plan. This will guarantee access to spectrum for all the licensees. . . . The Secretary of State for Trade and Industry has guaranteed on behalf of the UK Government the allocation of the frequencies required for the organisation of the Games.

2.8 We are working closely with the Government and LOCOG to take forward this spectrum plan. We expect to consult on a draft, addressing the services that we anticipate will require spectrum and options for allocating and assigning that spectrum, in summer 2007. We hope to make a statement, in the light of responses to that consultation, early in 2008.

2.9 Guarantee 15.9 of the bid stated that:

The Secretary of State for the Department of Trade and Industry has guaranteed on behalf of the UK Government to the waiving of fees payable for the allocated frequencies required for the Games.

2.10 The Secretary of State's letter to the President of the International Olympic Committee (IOC) clarified that this guarantee applied in respect of the following constituent groups:

- athletes;
- the IOC;
- LOCOG;
- national Olympic committees;
- international federations;
- the media;
- rights-holding broadcasters; and

- Olympic partners.

## **Purpose of this discussion document**

- 2.11 Given the importance of video links and wireless cameras for coverage of the London Games, we need to consider the interaction between the spectrum award and making spectrum available for the Games. Spectrum at 10 GHz is suitable for video links and wireless cameras. Subject to some geographic restrictions, spectrum in the band is already available in the UK for these systems: three 20 MHz channels at 10.30-10.36 GHz are authorised for use by PMSE and are used at present primarily for temporary point-to-point links. We are aware that there is interest in developing digital wireless cameras, though equipment is not currently available. Other parts of the band, including the spectrum for award, would be suitable for these systems.
- 2.12 As explained above, we are planning to make decisions about awarding 10 GHz before we have consulted on a draft spectrum plan for the London Games. It is also possible that the award itself will take place before the consultation on the plan has concluded. We need to let potential bidders in the award know the implications of making spectrum available for the Games as this could have a bearing on their approach to the award.
- 2.13 The remainder of this document sets out our options for facilitating access to the spectrum to be awarded at 10 GHz for the London Games and seeks comments from stakeholders. It proposes a condition that could be included in the licences to be awarded if we conclude in the light of comments on this document that we may need to make the spectrum available to meet the terms of London's bid and the Government guarantees.

## Section 3

# Options for accessing spectrum

## Demand for spectrum at 10 GHz for the London Games

- 3.1 Our work to date on a spectrum plan for the London Games has identified two broad categories of likely use: for the organisation of the event itself and for services that will support the event. The former can be further broken down into needs for a field-radio system, for audio links and for video links (including wireless cameras). Of these, we currently believe that only video links are likely to require spectrum above 1 GHz.
- 3.2 The experiences of the Sydney 2000 and Athens 2004 Games, the Turin 2006 Winter Games and the Manchester 2002 and Melbourne 2006 Commonwealth Games have informed these working assumptions, on which we will consult through the draft spectrum plan. Those Games have witnessed the use of a variety of bands, from as low as 1.293 GHz to as high as 49.78 GHz, for video links. They have also seen varying degrees of frequency reuse.
- 3.3 Specifically, we believe that the 10.00-10.68 GHz band was used for microwave mobile links—possibly for video transmission—during the Athens 2004 Games. We understand that 10 GHz is available for temporary use during the Beijing 2008 Games and that applications for its use have been made. The European Radiocommunications Committee of the European Conference of Postal and Telecommunications Administrations has also recommended<sup>3</sup> 10.0-10.6 GHz as a tuning range for wireless cameras and portable video links and 10.00-10.68 GHz for temporary point-to-point video links (all with preferred sub-bands of 10.30-10.45 GHz).
- 3.4 We therefore consider that 10.125-10.225 GHz and 10.475-10.575 GHz could be suitable for temporary use during the London 2012 Games. We are not, however, in a position to conclude whether other bands could satisfy the demand for spectrum for video links, nor will we be at least until we have made a statement following consultation on the draft spectrum plan. Given the desirability of meeting the current timescales for awarding 10 GHz, we judge that it would be better to avoid precluding its potential use for the London Games.

*Question 1. How likely do you consider spectrum at 10 GHz being required for the London Games?*

## Facilitating access to spectrum at 10 GHz

- 3.5 We currently anticipate assigning spectrum for the organisation of the London Games during the course of 2011. Consequently, even if we conclude that we need to use the spectrum to be awarded at 10 GHz for the London Games, we would still not be sure of the precise nature and implications of that use until much closer to the Games themselves. However, we believe it is likely that this will be limited in terms of:

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<sup>3</sup> See revised ERC Recommendation 25-10 on frequency ranges for the use of temporary terrestrial audio and video SAP/SAB links (incl. ENG/OB), available from <http://www.ero.dk/documentation/docs/doc98/official/pdf/rec2510e.pdf>.



- geography—at the venues set out above and possibly for backhaul to the International Broadcasting Centre in the Olympic Park;
  - time—during some test events and when the venues are being used during Games;
  - frequency—it may be possible for spectrum adjacent to 10.125-10.225 GHz and 10.475-10.575 GHz to be used instead of these bands at times; and
  - power—wireless cameras in this band typically have a maximum output power of 5 W EIRP, while point-to-point links typically have an output power of 10 dBW (with a maximum of 40 dBW).
- 3.6 We do not believe that guarantee 15.9 of London's bid for the Games and the Secretary of State for Trade and Industry's letter to the President of the IOC leave open the prospect of successful bidders for spectrum at 10 GHz and temporary users of the band for the Games making commercial arrangements.
- 3.7 We therefore propose to approach this issue by requiring successful bidders to avoid interference to any temporary use. We would want to give them maximum flexibility to decide how to do this by stipulating restrictions based on geography, time, frequency and power. Further detailed work on the precise nature of these restrictions, as well as on the financial implications for licensees, would be needed closer to the Games.

*Question 2. What impact would requiring licensees to avoid interference to any temporary use of spectrum at 10 GHz for the London Games have on the optimal use of the spectrum? Please quantify this impact if possible.*

*Question 3. What would be the most appropriate way of ensuring access for the London Games to spectrum at 10 GHz awarded to successful bidders?*

### **Proposed licence condition**

- 3.8 We may decide, in the light of responses to this discussion document, the need to meet the terms of London's bid and the Government guarantees and our statutory duties, that licensees should be required to avoid interference to any temporary use of spectrum at 10 GHz for the London Games. If so, we will expect to incorporate a suitable condition into successful bidders' licences. Paragraph 8(5) of Schedule 1 to the Wireless Telegraphy Act 2006 gives us the power to vary the terms of a licence at any time if it appears to us to be necessary or expedient to do so for the purpose of securing compliance with an international obligation of the UK. We therefore propose to include the following condition to make it clear to licensees that we may use this power for the purposes of arrangements relating to the London Games.

Pursuant to paragraph 8 of Section 1 to the Wireless Telegraphy Act 2006, Ofcom may not revoke or vary this Licence under paragraph 6 of Section 1 to the Wireless Telegraphy Act 2006 except:

...

(f) if it appears to Ofcom to be necessary or expedient to do so in the interests of national security or for the purpose of securing compliance with an international obligation of the United Kingdom (including in particular a variation to the provisions of this Licence

relating to the use of spectrum bands for the purpose of securing compliance with any international agreement or arrangements relating to the London 2012 Olympic Games and Paralympic Games to which the United Kingdom is a party).

*Question 4. Do you consider that the proposed licence condition would most efficiently meet the objective of requiring successful bidders to avoid causing interference to any temporary use of spectrum at 10 GHz for the London Games?*

## Section 4

# Next steps

- 4.1 We invite written views and comments on the proposals and issues raised in this document. We will take account of any comments that we receive in finalising our decisions on awarding this band. Comments should be sent to us by 12 April 2007. (See annex 1 for details.)
- 4.2 We will publish a statement of our conclusions on the proposals and issues raised in this document. If they require any amendment to the information set out in the Information Memorandum or any other documents that we have published in relation to awarding 10 GHz, we will publish supplementary documentation before the application date for the award.
- 4.3 We would make available to successful bidders information on the implications of temporary use of the band for the London Games as soon as it was available. This is unlikely to be significant at least until we have made a statement following consultation on the draft spectrum plan for the Games. As noted above, the precise nature and implications of temporary use could be limited until closer to the Games themselves.

## Annex 1

# Responding to this discussion document

## How to respond

- A1.1 We invite written views and comments on the issues raised in this document **by 5 p.m. on 12 April 2007**.
- A1.2 We intend to publish the responses that we receive. You should specify if you wish part or all of your response to remain confidential.
- A1.3 Please send your response to [joe.sonke@ofcom.org.uk](mailto:joe.sonke@ofcom.org.uk). If you want to discuss the issues raised in this document, please contact Joe Sonke on 020 7783 4345.

## Annex 2

# Questions

*Question 1. How likely do you consider spectrum at 10 GHz being required for the London Games?*

*Question 2. What impact would requiring licensees to avoid interference to any temporary use of spectrum at 10 GHz for the London Games have on the optimal use of the spectrum? Please quantify this impact if possible.*

*Question 3. What would be the most appropriate way of ensuring access for the London Games to spectrum at 10 GHz awarded to successful bidders?*

*Question 4. Do you consider that the proposed licence condition would most efficiently meet the objective of requiring successful bidders to avoid causing interference to any temporary use of spectrum at 10 GHz for the London Games?*