Release of 2010-2025 MHz

Consultation

Publication date: 10 May 2010

Closing date for responses: 21 June 2010

Contents

Section 1

Executive summary

1.1 This consultation seeks stakeholders' views on the best way to release the spectrum in the 2010-2025 MHz band (the 2010 MHz band) for new uses.

1.2 The band is allocated on a primary basis to the fixed and mobile services in the UK and intended for use on a worldwide basis by administrations wishing to implement IMT-2000 (i.e. 3G). It is currently unused in the UK and lightly used, if at all, overseas.

1.3 We have consulted a number of times about awarding the band. Previous market research indicated its potential uses were advanced mobile services, broadband wireless services, mobile multimedia services and programme-making and special events (PMSE). We had intended to award it alongside the 2500-2690 MHz band (the 2.6 GHz band) as it was considered a potential substitute or complement for the delivery of mobile broadband services. Litigation by two mobile network operators (MNOs) delayed that award.

1.4 14 months into the litigation process, and as momentum was growing in Europe for mobile use of the 790-862 MHz band (the 800 MHz band), the Government published wide-ranging proposals to modernise the UK's digital economy. These included a spectrum modernisation plan, under which the Government proposed we hold a combined auction of the 800 MHz and 2.6 GHz bands and spectrum MNOs might relinquish currently used for 2G and 3G services. The 2010 MHz band was not included in these proposals. We therefore we withdrew our decision to award the 2010 MHz and 2.6 GHz bands in a single, separate process.

1.5 Responses to our earlier consultations suggested there was limited demand for the band other than for PMSE, specifically wireless cameras. If wireless cameras are the only source of demand for the band, its optimal use in the short term would be secured by allocating it to PMSE. We could set technical licence conditions (TLCs) allowing all of 2010-2110 MHz to be treated as a single band, which would allow two additional wireless cameras to use the spectrum. We could provide the same security of tenure as for other PMSE-allocated bands or treat the band differently if there is good reason to believe alternative demand will arise in the medium term, perhaps by undertaking not to revoke PMSE access without a minimum notice period. And we could set fees for access on the same basis—reflecting the administrative costs of its management—as most of the spectrum at 2-3 GHz used for wireless cameras.

1.6 If there are other sources of demand for the band, we will decide the best way to release it in the light of all the information available to us. We could licence-exempt it for other uses, hold a competitive award or allocate it to PMSE but with fees for access reflecting its opportunity cost. Until we had made and implemented our decision, we could allow temporary use for wireless cameras.

1.7 In all circumstances, we believe we should make the band available for use for wireless cameras at the London 2012 Olympic Games and Paralympic Games in specific locations on a temporary basis.

1.8 We will ideally decide the best way to release the band for new uses by July 2010 at the latest, at the same time we take and publish decisions about future PMSE spectrum access.

Section 2

Spectrum for release

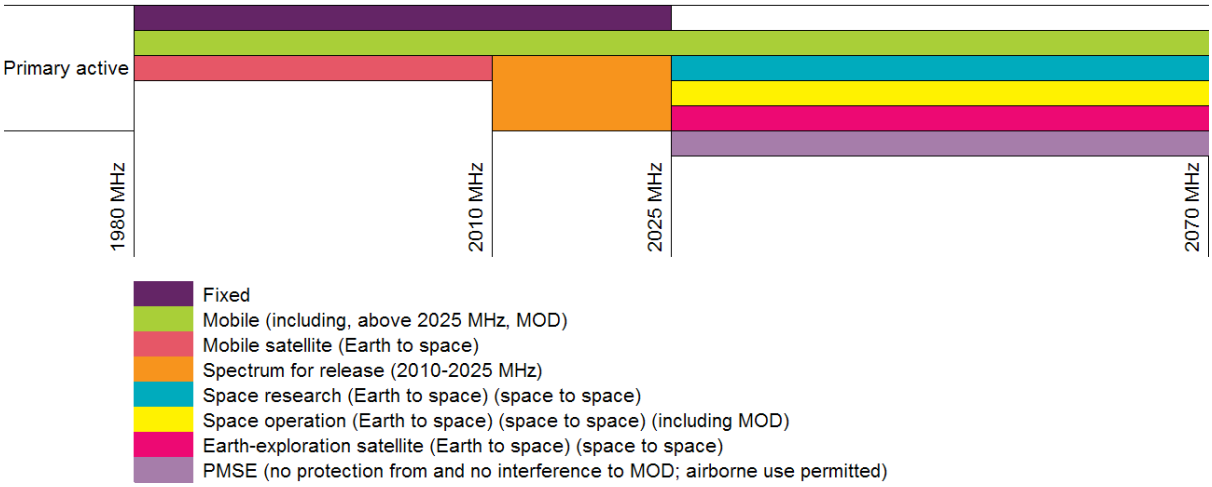
Spectrum in the 2010 MHz band

2.1 The 2010 MHz band comprises all 15 MHz at 2010-2025 MHz.

Allocations

2.2 Figure 1 below, based on the UK Frequency Allocation Table (UKFAT) 2008 (Issue No. 15),[1] shows the current allocations within and immediately adjacent to the 2010 MHz band.

Figure 1. Allocations in the 2010 MHz band and adjacent spectrum



2.3 The band is allocated on a primary basis to the fixed and mobile services. Both are active services. The UKFAT adds a reference to footnote 5.388 in the Radio Regulations, which states the band is intended for use, on a worldwide basis, by administrations wishing to implement IMT-2000 (i.e. 3G) but such use does not preclude the use of this band by other services to which it is allocated.

2.4 There are no secondary allocations for the band.

Assignments

2.5 At present, there are no assignments in the band.

2.6 We may at any time grant short-term nonoperational licences to use the band for activities such as trialling services and testing and developing equipment. Such licences would be issued through a coordination and clearance procedure involving licensed users of the band and under the condition nonoperational licensees could not claim protection from harmful interference from other licensees nor cause harmful interference to other licensees. There is no right of renewal at the end of the term of a nonoperational licence. Further information is available at www.ofcom.org.uk/radiocomms/ifi/licensing/classes/noperational/.

[1] www.ofcom.org.uk/radiocomms/isu/ukfat/ukfat08.pdf.

Other emissions

2.7 The band is subject to emissions from equipment using ultra-wideband (UWB). UWB is a generic term for technologies (e.g. radar imaging and short-range communications devices) typically characterised by the emission of very low-power radiation spread over a very large bandwidth.

2.8 We made the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2007 to exempt the use of spectrum by equipment using UWB technologies.[2] These implemented Commission Decision 2007/131/EC of 21 February 2007 on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community.[3] We subsequently made the Wireless Telegraphy (Ultra-Wideband Equipment) (Exemption) Regulations 2009,[4] implementing Commission Decision 2009/343/EC of 21 April 2009 (2009/343/EC) amending its earlier Decision.[5]

2.9 In summary, the provisions in these Regulations applicable to the 2010 MHz band for generic UWB devices are as follows:

- the emissions limits when measured in any direction are—
  - a maximum mean effective isotropic radiated power (EIRP) density no greater than -85.0 dBm/MHz; and
  - a maximum peak EIRP no greater than -45.0 dBm or the equivalent transmission level; and
- the equipment shall—
  - be used indoors or, where it is not used indoors, not be attached to any infrastructure, installation or outdoor antenna that is fixed or to any motor vehicle or railway vehicle; and
  - not cause harmful interference to any wireless telegraphy.

2.10 For UWB devices used for building-material analysis (BMA):

- the emissions limits when measured in any direction are—
  - a maximum mean EIRP density no greater than -65.0 dBm/MHz; and
  - a maximum peak EIRP no greater than -25.0 dBm or the equivalent transmission level; and
- the equipment shall not cause harmful interference to any wireless telegraphy.

2.11 Discussions are ongoing within the European Union (EU), the European Conference of Postal and Telecommunications Administrations (CEPT) and the European Telecommunications Standards Institute about the possibility of different conditions for application-specific uses of UWB. The limits and mitigation techniques for

[2] www.opsi.gov.uk/si/si2007/pdf/uksi_20072084_en.pdf.
[3] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:055:0033:0036:EN:PDF.
[4] www.opsi.gov.uk/si/si2009/pdf/uksi_20092517_en.pdf.
[5] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:105:0009:0013:EN:PDF.

ground- and wall-probing radar (GPR/WPR) imaging systems chosen by us or the European Commission are likely to be similar to those already published in ECC Decision (06)08 of 1 December 2006 on the conditions for use of the radio spectrum by Ground- and Wall-Probing Radar imaging systems.[6]

2.12 GPR/WPR use is currently licensed in the UK to operate between 150 MHz and 4 GHz. Equipment must comply with the technical requirements set out in annex B of the UKFAT. The basic technical limits are currently:

- maximum total radiated power = 250 microwatts
- maximum radiated spectral line power = 100 nanowatts
- maximum leakage power from antenna shield = 10 nanowatts

2.13 Further information on the rules and regulations applied in licensing GPR/WPR can be found at www.ofcom.org.uk/radiocomms/ifi/licensing/classes/rlans/gprlicences/.

Adjacent bands

Allocations

2.14 The 1980-2010 MHz band is allocated on a primary basis to the fixed, mobile and mobile satellite (Earth-to-space) services. All three are active services.

2.15 The 2025-2110 MHz band is allocated on a primary basis to the space research, space operation and Earth-exploration satellite services, with all three allocations permitted in both the Earth-to-space and space-to-space directions. This band is also allocated on a primary basis to the mobile service. All the allocations are active services.

2.16 There are no secondary allocations adjacent to the 2010 MHz band.

Assignments

1980-2010 MHz band

2.17 The fixed and mobile allocations in the 1980-2010 MHz band have no assignments at present.

2.18 The Ministry of Defence (MOD) has one assignment in the band for a system having EIRP of 20 dBW in a 1 kHz bandwidth issued on a non-interference basis.

2.19 There are authorisations and operational satellites in the band, and the EU has adopted legislation seeking to enable new mobile satellite services (MSS) in the 2 GHz bands. The first was Commission Decision 2007/98/EC of 14 February 2007 on the harmonised use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing mobile satellite services.[7] This was followed by Decision 626/2008/EC of the European Parliament and of the Council of 30 June 2008 on the selection and authorisation of systems providing mobile satellite services.[8] Commission Decision 2009/449/EC of 13 May 2009 on the selection of

[6] www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0608.PDF.
[7] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:043:0032:0034:EN:PDF.
[8] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:172:0015:0024:EN:PDF.

operators of pan-European systems providing mobile satellite services completed this process,[9] and the selected operators—Inmarsat Ventures and Solaris Mobile—have been assigned spectrum to provide MSS.

2.20 ECC Decision (06)09 of 1 December 2006 on the designation of the bands 1980-2010 MHz and 2170-2200 MHz for use by systems in the Mobile-Satellite Service including those supplemented by a Complementary Ground Component (CGC) preceded this EU legislation.[10]

2025-2110 MHz band

Mobile service

2.21 The UKFAT indicates the MOD makes assignments for the mobile service in the 2025-2070 MHz band. The MOD has indicated to us it currently uses this band to support mobile radio-relay links with UK-wide assignments operating with up to around 59 dBm EIRP (32 dBm mean power into 26.5 dBi antenna) in channels up to 8 MHz.

PMSE

2.22 The 2025-2110 MHz band is available for digital point-to-point video links with an EIRP of up to 20 dBW in a maximum bandwidth of 10 MHz, with some geographic restrictions. No analogue use is permitted. Airborne use is currently authorised in the 2025-2070 MHz band but restricted to a maximum EIRP of 13 dBW.

2.23 In practice, the lower edge of the first 10 MHz channel typically starts at 2030 MHz, leaving a 5 MHz separation between PMSE use and the 2025 MHz adjacency. But we recognise there would be a significant advantage for wireless-camera users in replanning the band so the lower edge of the first channel starts at 2025 MHz. This could introduce an extra usable channel at the top of the band, which is similarly offset by 5 MHz (i.e. at 2105 MHz) from adjacent GSM use above 2110 MHz.

Space-research and Earth-exploration satellite services

2.24 The 2025-2110 MHz band is used for telecommand and -control of space-research and Earth-exploration satellite services. Eight licensed earth stations, operating from three separate locations, currently work in conjunction with five non-geostationary satellites operating in the 2048-2063 MHz band. The emission codes range from 20K4F1DAN to 50K0F1DAN depending on the satellite, and the maximum EIRP density ranges from 11 to 30 dBW/Hz.

Space operation

2.25 The UKFAT indicates assignments are made to the MOD for the space-operation service in the 2025-2110 MHz band. The MOD has indicated to us it uses the band to support telecommand and -control operation of satellites. It currently operates satellite earth stations at three sites in the UK, with transmissions having EIRP of up to 76 dBW in 300 kHz. We understand the MOD has no plans to change the operational arrangements for these satellite earth stations. However, it has indicated it reserves the right to consider and implement changes in future. The nature and extent of any such changes cannot be predicted with certainty at this time.

[9] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:149:0065:0068:EN:PDF.
[10] www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0609.PDF.

Section 3

Previous consultations

3.1 In 2003, the Radiocommunications Agency (RA) sought views on the UK's approach in discussions on developing deliverables in CEPT's Electronic Communications Committee (ECC) relevant to the 2.6 GHz band.[11] In particular, RA consulted on the most appropriate spectrum arrangements and associated issues. We subsequently issued a short statement highlighting our view we should engage actively in CEPT's work to promote a flexible framework permitting the UK to use market-based solutions to decide the optimal use of the spectrum for terrestrial applications.[12] We then took part in discussions in CEPT on that basis.

3.2 On 13 January 2005, we consulted on our Spectrum Framework Review: Implementation Plan (SFR:IP),[13] in which we outlined preliminary proposals for awarding the 2010 MHz band alongside the 2290-2300 MHz band (the 2290 MHz band) and the 2.6 GHz band. We proposed they should be awarded on a service- and technology-neutral basis.

3.3 On 28 July 2005, we published our SFR:IP Interim Statement.[14] This set out our intention to move forward with proposals to award service- and technology-neutral licences for these bands as soon as practicable subject to ongoing negotiations within CEPT and the EU on harmonisation measures.

3.4 We subsequently engaged extensively with stakeholders to prepare decisions for awarding the bands. We published three further consultations on the award:

- on 11 December 2006, covering the general policy for the award;[15]
- on 1 August 2007 (a discussion document), providing updated proposals in response to a range of comments made in responses to the December 2006 consultation.[16] We also announced our decision to separate the award of the 2290 MHz band and consider it again at a later date; and
- on 19 December 2007, setting out proposals for the auction design and rules and a first draft of the statutory instrument establishing the award process.[17]

3.5 We also held several seminars to prepare the consultations and explain our proposals:

- on 16 May 2006, we invited inputs to our independent advisors' work and sought comments in preparation for the December 2006 consultation;[18]
- on 8 February 2007, we presented our proposals in the December 2006 consultation;[19]

[11] www.ofcom.org.uk/static/archive/ra/topics/pmc/consult/2-5ghzcondocfinal.doc.
[12] www.ofcom.org.uk/consult/condocs/3g_2500_2690_consultation/.
[13] www.ofcom.org.uk/consult/condocs/sfrip/sfip/sfr-plan.pdf.
[14] www.ofcom.org.uk/consult/condocs/sfrip/statement/statement.pdf.
[15] www.ofcom.org.uk/consult/condocs/2ghzawards/2ghzawards.pdf.
[16] www.ofcom.org.uk/consult/condocs/2ghzdiscuss/main.pdf.
[17] www.ofcom.org.uk/consult/condocs/2ghzrules/2ghzcondoc.pdf.
[18] www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/mayevent/.

- on 10 September 2007, we presented our proposals in the August 2007 discussion document;[20] and

- on 29 November 2007, we set out our provisional thoughts and invited further feedback on auction rules and design to prepare the December 2007 consultation.[21]

3.6 Throughout this process, we also held discussions with a range of stakeholders in the UK, particularly existing users of adjacent spectrum (e.g. the Civil Aviation Authority, the MOD and the PMSE sector) and parties who expressed an interest in using the available bands, to clarify our understanding of the circumstances relevant to the award. As an active participant in European regulatory discussions, we also discussed use of the 2010 MHz, 2290 MHz and 2.6 GHz bands in detail in a number of CEPT and EU working groups and with a range of other European regulators and stakeholders. And we worked closely with the European Commission and other Member States to develop Commission Decision 2008/477/EC of 13 June 2008 on the harmonisation of the 2500-2690 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community.[22]

3.7 In the light of all these proceedings, we published a statement on 4 April 2008 with our decision to proceed with an auction of the 2010 MHz and 2.6 GHz bands as soon as possible.[23]

Summary of previous plans

3.8 Market research at the time of the December 2006 consultation indicated four main potential uses of the 2010 MHz, 2290 MHz and 2.6 GHz bands:

- advanced mobile services using frequency-division duplexing (FDD) technologies such as 3G and its evolutions (UMTS FDD, HSPA and LTE) for transmitting voice and data;

- broadband wireless services using time-division duplexing (TDD) technologies like WiMAX or a 3G variant (UMTS TDD) for carrying data (e.g. voice over IP);

- mobile multimedia services (e.g. mobile television); and

- wireless cameras, temporary links and mobile or portable links for PMSE.

3.9 We proposed to award the 2010 MHz band as a single 15 MHz block as the technical restrictions that would need to be imposed on 5 MHz channels would be unduly restrictive. The 2.6 GHz band would be packaged into paired lots of 2 × 5 MHz suitable for FDD and unpaired lots of 5 MHz suitable for TDD. We proposed to award the bands together as the 2010 MHz band was considered a substitute for, or complement to, the unpaired 2.6 GHz lots for use by TDD to deliver broadband wireless services.

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[19] www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/slide1.pdf and www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/slide2.pdf.
[20] www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/part1.pdf and www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/part2.pdf.
[21] www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/workshop291107.pdf.
[22] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:163:0037:0041:EN:PDF.
[23] www.ofcom.org.uk/consult/condocs/2ghzrules/statementim/statement/statement.pdf.

3.10 We proposed awarding the 2290 MHz band as a distinct block in advance of the auction of the 2010 MHz and 2.6 GHz bands as it was seen as a much weaker potential substitute.

3.11 Throughout our consultation process, stakeholders indicated less general interest in the 2010 MHz band compared to the 2.6 GHz band. The substitutability between the bands was seen as modest. The 2010 MHz band remained a potential substitute for WiMAX or other TDD use, but the key focus of the community was on other bands. The BBC argued the band should be reserved for PMSE use.

Recent developments

3.12 Shortly after we published our April 2008 statement, T-Mobile and O2 challenged our decision in the courts. The litigation process lasted 14 months, during which there were important developments. In particular, momentum grew in Europe for mobile broadband use of the 800 MHz band, with support and specific plans from countries such a France and Germany. And the Government launched a wide-ranging plan to modernise the UK's digital economy, covering subjects such as investment in next-generation fixed networks and action on illegal peer-to-peer file sharing. This Digital Britain initiative included a set of proposals regarding spectrum use for mobile services, covering the award of the 800 MHz and 2.6 GHz bands.[24]

3.13 On 16 June 2009, the Government published its Digital Britain final report.[25] This stated the Government intended to implement the majority of the proposals of the independent spectrum broker (ISB),[26] including in particular a combined auction of the paired lots in the 2.6 GHz band with the 800 MHz band that will become available as a result of the switchover from analogue to digital terrestrial television. The Digital Britain final report set out the Government's intention to direct us in this regard. Any such direction would follow the conclusion of further technical arbitration, to be carried out by the ISB and others, and public consultation.

3.14 In light of the Government's intention to implement the ISB's proposals, including directing us in this regard, and the further period of time that would elapse before any such direction was made, we considered it was no longer appropriate to rely on our April 2008 decision to award the 2010 MHz and 2.6 GHz bands as soon as possible. We therefore decided to withdraw that decision on 23 June 2009.[27]

3.15 The Government subsequently consulted on a direction to us on 16 October 2009.[28] It published its response on 9 March 2010,[29] then laid such a direction before Parliament.[30] This did not include the 2010 MHz band. However, the direction was not voted on before the end of the last Parliament, so it is will be up to the new Government to decide what to do with it.

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[24] www.culture.gov.uk/images/publications/digital_britain_interimreportjan09.pdf.
[25] www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf.
[26] www.culture.gov.uk/reference_library/publications/6147.aspx.
[27] www.ofcom.org.uk/radiocomms/spectrumawards/awardspending/award_2010/Update26GHz230609.pdf.
[28] www.bis.gov.uk/assets/biscore/corporate/docs/migrated-consultations/digital%20britain%20report-%20a%20consultation%20on%20a%20direction%20to%20ofcom%20to%20implement%20the%20wireless%20radio%20spectrum%20modernisation%20programme.pdf.
[29] www.bis.gov.uk/assets/biscore/business-sectors/docs/10-737-government-response-consultation-ofcom-implement-spectrum-modernisation.pdf.
[30] www.opsi.gov.uk/si/si2010/draft/pdf/ukdsi_9780111495650_en.pdf.

Section 4

Demand for the 2010 MHz band

4.1 Our previous consultations revealed demand for the band for wireless broadband, mobile multimedia and wireless cameras.

Wireless broadband

4.2 Interest in the 2010 MHz band for the delivery of mobile broadband has declined. MNOs' interest in the band was always limited, as indicated by responses to the December 2006 consultation and subsequent engagement, and the focus is now on the bigger 800 MHz and 2.6 GHz bands subject to EU harmonisation for mobile use. This focus was reflected in the exclusion of the 2010 MHz band from the Government's proposed direction—not just the spectrum to be auctioned but also the spectrum caps.

4.3 The WiMAX community has also directed its attention at the 2.6 GHz and other bands. It is not clear on the evidence we have at present whether there is demand for the 2010 MHz band for TDD-based technologies.

Mobile multimedia

4.4 Trials of mobile television have been considered using the 1900-1920 MHz band. If this proved viable, the 2010 MHz band might be a candidate for similar use.

Wireless cameras

4.5 We have been told by stakeholders there is demand to use the band for wireless cameras. Indeed, as noted above, the BBC responded to the December 2006 consultation arguing the band should be allocated to PMSE.

4.6 The 2025-2110 MHz band is already used for PMSE, and we proposed it remain so on the basis of no interference to the MOD in our first consultation on the detailed design of the award of spectrum to a band manager with PMSE obligations, published on 31 July 2008.[31] Some existing equipment (which uses an 8 MHz raster within a 10 MHz channel) can tune without modification to the 2010 MHz band, the addition of which would enable a further wireless camera to be used in any given location. Indeed, adapting the channelling arrangements across the full 2010-2110 MHz band could accommodate two extra wireless-camera channels, so improving efficiency of use beyond the sum of the parts. This is particularly important as the spectrum around 2 GHz available for wireless cameras is beginning to become congested at times of peak demand.

International allocations and uses

2010 MHz band

4.7 The international allocations in the 2010 MHz band are identical to those in the UKFAT (i.e. primary allocations to the fixed and mobile services) except for region 2 of the International Telecommunication Union (ITU)—the Americas—where there is also a primary allocation to the mobile satellite (Earth-to-space) service.

[31] www.ofcom.org.uk/consult/condocs/bandmngr/condoc.pdf.

4.8 ERC Recommendation 01-01 (revised Dublin 2003, Helsinki 2007) on border cooperation of UMTS suggests coordination between European administrations should be based on bilateral or multilateral agreements.[32] The Recommendation also provides field-strength levels as a basis for coordinating UMTS systems but makes no recommendations involving other IMT-2000 radio interfaces or other technologies.

4.9 Work by the ECC has produced its Decision (06)01 of 24 March 2006 on the harmonised utilisation of spectrum for terrestrial IMT-2000/UMTS systems operating within the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz.[33] Under this Decision, the 2010 MHz band may be used either for TDD or for FDD uplink. It does not envisage an administration would implement mixed FDD/TDD use in the band. The UK is not committed to implement ECC Decision (06)01.

4.10 The European Communications Office of CEPT is currently compiling information from administrations, operators and manufacturers on likely uses of the 1900-1920 MHz and 2010 MHz bands. We will take this into account in our decisions and publish anything we can during the consultation period. Early results suggest the 2010 MHz band is little used in European countries, with few concrete plans for its release and no common view of likely uses.

Germany

4.11 The regulator, the Bundesnetzagentur, is currently auctioning the 2010 MHz band alongside the 800 MHz and 2.6 GHz bands and other spectrum suitable for mobile use. At the time of publishing this consultation, the bidding on the lot stood at €3.905m (£3.3m at prevailing exchange rates, £0.003 per MHz per head of population). The progress of the auction can be followed online,[34] where the block is described as "2,0 GHz (ungepaart)—1 × 14,2 MHz konkret."

Norway

4.12 The regulator, the Norwegian Post and Telecommunications Authority, auctioned the 2010 MHz and 2.6 GHz bands in November 2007. The 2010 MHz band was acquired by Inquam Broadband for 1m kroner (£89,807 at prevailing exchange rates, £0.001 per MHz per head of population). The licence permits use of the band for terrestrial radio services, is tradable and is valid until 31 December 2022.[35]

United States

4.13 The 2010 MHz band is used for advanced wireless services (2020-2025 MHz only), cable antenna relays, local-television transmissions, MSS and PMSE. Licence-exempt operation is also permitted.[36]

[32] www.erodocdb.dk/Docs/doc98/official/pdf/REC0101e.PDF.
[33] www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0601.PDF.
[34] www2.bundesnetzagentur.de/frequenzversteigerung2010/ergebnisse.html.
[35] www.npt.no/portal/page/portal/PG_NPT_NO_EN/PAG_NPT_EN_HOME/PAG_RESOURCE_TEXT?p_d_i=-121&p_d_c=&p_d_v=50655.
[36] See http://reboot.fcc.gov/reform/systems/spectrum-dashboard.

Adjacent bands

4.14 The allocations in the 1980-2010 MHz band in neighbouring countries are identical to those in the UKFAT. In the 2025-2110 MHz band, there is a primary allocation to the fixed service in all three ITU regions that does not appear in the UKFAT.

Current work in Europe

4.15 CEPT is currently consulting on a draft report to the European Commission in response to a mandate to develop least-restrictive technical conditions for the 2 GHz bands.[37] This notes studies have highlighted limitations in the use of the 1900-1920 and 2010 MHz bands for broadband communication and the introduction of flexibility gives the potential for a wider range of uses of these bands.

4.16 The report may lead to a Commission Decision that is binding on the UK. If so, we would expect it to establish service- and technology-neutral TLCs.

[37] www.ero.dk/0B9DC23E-0CCC-462C-B124-705AAD0A6ABB?frames=no&.

Section 5

Availability, demand and release options

TLCs

5.1 The following TLCs for use of the 2010 MHz band were derived as a result of our previous consultations on its release alongside the 2.6 GHz band. As noted in section 4, they may be subject to change following CEPT's consultation on least-restrictive technical conditions for the 2 GHz bands.

5.2 Subject to the permitted out-of-block emissions, equipment must only transmit within the 2010 MHz band. It can be established and installed for terrestrial use, but use for transmission between terrestrial and aeronautic stations is not permitted.

5.3 The maximum mean power transmitted in the range 2010.5-2024.7 MHz must not exceed:

- for uplink use of frequencies 31 dBm/5 MHz total radiated power
- for downlink use of frequencies 61 dBm/5 MHz EIRP

5.4 In cases where terminal or user stations are permanently installed at a fixed location, an alternative maximum mean power of 35 dBm/5 MHz for uplink use of frequencies applies.

5.5 Tables 1 and 2 below set out the permissible out-of-block emission limits outside this range.

Table 1. Permissible out-of-block emission limit for downlink use of frequencies

Offset from relevant block edge	Maximum mean EIRP for out-of-block emissions
1980 to -0.5 MHz (lower block edge)	-45 dBm/MHz
-0.5 to -0.2 MHz (lower block edge)	+3 + 15(Δ_F + 0.2) dBm/30 kHz
-0.2 to 0.0 MHz (lower block edge)	+3 dBm/30 kHz
0.0 to +0.2 MHz (upper block edge)	+3 dBm/30 kHz
+0.2 to +1.0 MHz (upper block edge)	+3 - 15(Δ_F - 0.2) dBm/30 kHz
+1.0 to +5.0 MHz (upper block edge)	+4 dBm/MHz
+5.0 (upper block edge) to 2055 MHz	-38 dBm/MHz

Table 2. Permissible out-of-block emission limit for uplink use of frequencies

Offset from relevant block edge	Maximum mean EIRP for out-of-block emissions
1980 to -6.0 MHz (lower block edge)	-19 dBm/MHz
-6.0 to -5.0 MHz (lower block edge)	-13 dBm/MHz
-5.0 to -1.0 MHz (lower block edge)	-10 dBm/MHz
-1.0 to 0.0 MHz (lower block edge)	-15 dBm/30 kHz
0.0 to +1.0 MHz (upper block edge)	-15 dBm/30 kHz
+1.0 to +5.0 MHz (upper block edge)	-10 dBm/MHz
+5.0 to +6.0 MHz (upper block edge)	-13 dBm/MHz
+6.0 (upper block edge) to 2055 MHz	-19 dBm/MHz

where: Δ_F is the frequency offset in MHz from the relevant block edge

the lower block edge is at 2010.5 MHz
the upper block edge is at 2024.7 MHz

5.6 Where technologies actively transmit in bursts (e.g. TDD), the limits above apply to the active part of the transmission.

5.7 In cases where the inputs to different antennas are not correlated, the maximum mean EIRP is calculated from the sum of the EIRPs for each separate antenna. This applies for MIMO, transmit diversity and "antenna combining" (where different transmitter channels are fed to different branches of a diversity antenna system).

5.8 In cases where the inputs to different antennas or antenna elements are correlated, the maximum mean EIRP is calculated as follows:

- $EIRP_{effective} = \Sigma P_{nom}$ (dBm) + 10 log 180/θ + 10 log 360/φ

where:

- ΣP_{nom} is the sum of the nominal maximum powers of the transmitter outputs feeding each element, measured at the antenna port;
- θ is the -3 dB beamwidth of the antenna array in the vertical plane (if this beamwidth can vary, the minimum value is used); and
- φ is the angle in the horizontal plane for which the antenna system is intended to provide service (e.g. for an antenna system intended to provide 360° coverage with four arrays, this angle would be 90°).

5.9 This applies to adaptive or beam-forming antenna arrays where, averaged over time, the power radiated by the antenna system is spread evenly over its angle of operation.

5.10 We will consider any proposals to amend the TLCs for the 2010 MHz band after its release on a case-by-case basis.

Implications for CGC

5.11 On 3 November 2008, we consulted on the licensing arrangements in the UK for base stations associated with CGC operating as integral parts of MSS in the 1980-2010 MHz and 2170-2200 MHz bands.[38] We came to certain conclusions about the terms and conditions necessary to protect CGC.

5.12 To manage interference to MSS space receivers, CEPT has studied adjacent-band compatibility between UMTS and the satellite component of MSS, and ERC Report 65 on adjacent-band compatibility between UMTS and other services in the 2 GHz band suggests a 500 kHz guard band is necessary to manage interference.[39] This guard band is reflected in ECC Decision (06)01, which specifies the nearest UMTS carrier to the 2010 MHz band should be centred on 2013 MHz or above. The UK has not committed to implement this ECC Decision. However, one element of the TLCs for use of the 2010 MHz band set out above is in accordance with the principle

[38] www.ofcom.org.uk/consult/condocs/cgcs2/cgcs2.pdf.

[39] www.erodocdb.dk/doks/filedownload.aspx?fileid=1914&fileurl=http://www.erodocdb.dk/Docs/doc98/official/pdf/REP065.PDF.

of a 500 kHz guard band between the edge of the lowest UMTS carrier in the 2010 MHz band and the boundary at 2010 MHz.

5.13 To manage interference to CGC base stations, our statement of 17 July 2009 developed technical criteria to protect CGC base stations from unwanted emissions in the 2010 MHz band.[40] The out-of-band limits applicable to transmissions in the band are shown in tables 1 and 2 above. Our statement considered there will be no guard band restricting CGC use within the 1980-2010MHz band.

Implications for space research

5.14 CEPT has studied adjacent-band compatibility between UMTS in the 2010 MHz band and the space-science services in the 2025-2110 MHz band, and ERC Report 65 suggests a 300 kHz guard band is suitable to prevent harmful interference. This guard band is reflected in ECC Decision (06)01, which specifies the nearest UMTS carrier to 2025 MHz should be centred on 2022.2 MHz or below. The TLCs for use of the 2010 MHz band set out above are in accordance with the principle of a 300 kHz guard band between the edge of the highest carrier in the 2010 MHz band and the boundary at 2025 MHz.

Demand

5.15 The legal and regulatory framework that governs how we release spectrum for new uses, and therefore applies to releasing the 2010 MHz band, is described in annex 5.

5.16 Fundamental to our decision on the best way to release the band within this framework is a better understanding of the demand for this spectrum.

Question 1. Is there demand to use the band for wireless cameras?

Question 2. Is there demand for other uses of the band?

Question 3. How might demand for the band change in the foreseeable future?

5.17 Wireless cameras used for electronic newsgathering and outside broadcasts typically require a high quality of service. Wireless-camera use of the 2025-2110 MHz band (and others) is licensed precisely to avoid the increased risk of harmful interference inherent in licence-exempt operation, and we believe the same approach to the 2010 MHz band would be appropriate. At the same time, wireless cameras can use the 2400-2483.5 MHz band on a licence-exempt basis, sharing with other services including WiFi, although the volume of this use is not significant when compared to other spectrum at 2-3 GHz used for wireless cameras.

Question 4. Should any wireless-camera use of the band be licence-exempt?

5.18 Between 1998 and 2006, the 2010-2020 MHz band was available for use by licence-exempt mobile equipment in the UK and other European countries compliant with ERC Decision (99)25 on the harmonised utilisation of spectrum for terrestrial Universal Mobile Telecommunications System (UMTS) operating within the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz.[41] However, there was no demand for this use, equipment was neither developed for nor deployed in the band, and the licence-exemption was removed in accordance with ECC Decision (06)01.

[40] www.ofcom.org.uk/consult/condocs/cgcs2/statement/2ghzstatement.pdf.
[41] www.erodocdb.dk/Docs/doc98/Official/Pdf/Dec9925e.pdf.

Question 5. Should any other use of the band be licence-exempt?

Demand only for PMSE

5.19 If, as we believe, wireless cameras are the only source of demand for the 2010 MHz band, its optimal use in the short term would be secured by allocating it to PMSE. This raises issues about the associated TLCs and non-TLCs.

TLCs

5.20 The TLCs described above assume the band is released on a standalone basis. In particular, they assume the user of the band needs to avoid causing harmful interference to users of adjacent spectrum.

5.21 If the adjacent spectrum at the top of the band (i.e. above 2025 MHz) remains allocated to PMSE as we proposed in our first consultation on the detailed design of the band-manager award, more efficient use of the band may be achieved by setting different TLCs.

5.22 As it stands, the 15 MHz of spectrum in the band can currently accommodate one wireless camera using a 10 MHz channel. Setting different TLCs at the top of the band to allow all of 2010-2110 MHz to be treated as a single band would allow two additional wireless cameras to use the spectrum. Technical coordination would be required to ensure the wireless cameras could coexist with each other, but this would be undertaken on the same basis as it is today.

5.23 Tables 3 and 4 below set out the TLCs and block-edge mask (BEM) for the adjacent spectrum at the top of the 2010 MHz band proposed in our second consultation on the detailed design of the band-manager award, published on 22 June 2009.[42]

Table 3. Proposed TLCs for adjacent spectrum at the top of the 2010 MHz band

Band	Frequency (MHz)	Maximum in-band power (effective radiated power)	Apparatus/restrictions	Airborne
69	2025-2070	10 dBW/MHz	Available UK-wide except within 5 km of Bude (SS 255 116) and Menwith Hill (SE 205 594)	No
70	2025-2070	3 dBW/MHz	Available UK-wide for airborne use at 13 dBW ERP except (i) in the airspace volume described by ±1° of elevation from the geostationary arc (for elevation of 4° or more) of an earth station within 5 km radius of Bude (SS 255 116) and Menwith Hill (SE 205 594) or (ii) within 5 km of Bude (SS 255 116) and Menwith Hill (SE 205 594). No protection from, or interference to, tactical radio relay	Yes

[42] www.ofcom.org.uk/consult/condocs/bandmanager09/bandmanager09.pdf.

Band	Frequency (MHz)	Maximum in-band power (effective radiated power)	Apparatus/restrictions	Airborne
71	2070-2110	10 dBW/MHz	Available UK-wide except within 5 km of Bude (SS 255 116) and Menwith Hill (SE 205 594)	No
72	2070-2110	3 dBW/MHz	Available UK-wide for airborne use at 13 dBW ERP except (i) in the airspace volume described by ±1° of elevation from the geostationary arc (for elevation of 4° or more) of an earth station within 5 km radius of Bude (SS 255 116) and Menwith Hill (SE 205 594) or (ii) within 5 km of Bude (SS 255 116) and Menwith Hill (SE 205 594). No protection from, or interference to, tactical radio relay	Yes

Table 4. Proposed BEM for adjacent spectrum at the top of the 2010 MHz band

Distance from band edge (MHz)	Maximum power spectral density for out-of-band emissions (dBm/4 kHz)
0-10	-45.21
10-25	-51.21

5.24 The geographic restrictions of wireless-camera use of the 2025-2110 MHz band would not apply to the 2010 MHz band. Airborne use would also be permitted.

5.25 To protect operation below 2010 MHz, there might be some restriction on the EIRP at which PMSE can operate as transmissions will have to meet the -45 dBm/MHz limit.

Question 6a. If we allocate the band to PMSE, is there good reason not to set TLCs to allow all of 2010-2110 MHz to be treated as a single band?

Question 6b. If so, what TLCs should we set?

Non-TLCs

5.26 Our first consultation on the detailed design of the band-manager award, published on 31 July 2008, made a number of proposals for future PMSE spectrum access. While our interim statement of 15 April 2010 on future PMSE spectrum management, access and availability announced our decision to defer the award until after the Olympics, it also indicated we would still take forward some of our spectrum-access proposals.[43] Specifically:

- we accepted PMSE stakeholders' arguments our decision to provide security of tenure until 2018, set out in our statement of 13 December 2007 on our approach

[43] www.ofcom.org.uk/consult/condocs/bandmanager09/statement/statement.pdf.

to awarding the digital dividend,[44] was unsatisfactory. We indicated we would set out arrangements to provide greater security of tenure; and

- we would decide when and how we would introduce fees for PMSE spectrum use based on administered incentive pricing (AIP) to reflect its opportunity cost.

5.27 We expect to take and publish both decisions by July 2010 at the latest. They are relevant if we allocate the 2010 MHz band to PMSE as we would expect to treat it the same as other PMSE-allocated bands in the absence of good reason not to.

Security of tenure

5.28 We might treat the 2010 MHz band differently if, for example, the only current demand for it is for wireless cameras but there is good reason to believe alternative demand will arise in the medium term. If this is the case, given some existing wireless cameras can tune to the band without modification or investment in new equipment, it might be appropriate for us to provide security of tenure by undertaking not to revoke PMSE access without a minimum notice period (c.f. the five years enjoyed by many holders or administratively assigned licences).

Question 7a. If we allocate the band to PMSE, is there good reason not to provide the same security of tenure as for other PMSE-allocated bands?

Question 7b. If so, what security of tenure should we provide?

Fees

5.29 Our second band-manager consultation estimated a zero opportunity cost for most of the 295 MHz in bands at 2-3 GHz (including the 2025-2110 MHz band) used for wireless cameras. This recognised the absence of identified alternative demand and of likely excess PMSE demand based on our approach of assessing how much equipment would be rendered unusable by the removal of an 8 MHz decrement of spectrum. The one exception was the 2390-2400 MHz band, which was identified for possible future harmonised wireless telecommunications use at the World Radiocommunication Conference in 2007 and for which we estimated an opportunity cost of £216k per year.

5.30 We are not aware of any good reason to treat the 2010 MHz band differently in this respect from most of the spectrum at 2-3 GHz used for wireless cameras. As a consequence, and subject to our decisions on introducing AIP-based fees for PMSE spectrum use, we would expect fees for access to the band to reflect the administrative costs of its management.

Question 8a. If we allocate the band to PMSE, is there good reason not to set fees for access on the same basis as most of the spectrum at 2-3 GHz used for wireless cameras?

Question 8b. If so, how should we set fees for access?

[44] www.ofcom.org.uk/consult/condocs/ddr/statement/statement.pdf.

Other demand

5.31 If responses to this consultation indicate wireless cameras are not the only source of demand for the 2010 MHz band, we will decide the best way to release it in the light of all the information available to us. Our options will include:

- licence-exemption for other uses (and possibly wireless cameras as well);
- a competitive award, probably by auction for a single service- and technology-neutral licence; and
- allocation to PMSE but with AIP-based access fees to reflect its opportunity cost.

5.32 Until we had made and implemented our decision—the timetable for which is uncertain, not least as it would depend on the prioritisation of this work relative to our other spectrum-management activities—we would be minded to allow temporary use of the band for wireless cameras on a rolling six-month notice period and with fees for access set on the same basis as most of the spectrum at 2-3 GHz. This would be in line with approach to the 2290 MHz band, temporary use of which we announced on 19 December 2007[45] prior to proposing its award to the band manager with PMSE obligations in our first consultation on the design of that award.

Question 9a. If we do not immediately decide to allocate the band to PMSE, is there good reason not to allow temporary use for wireless cameras in line with our approach to the 2290 MHz band?

Question 9b. If so, what should we do until we make and implement our decision on the best way to release it?

Olympics

5.33 Our statement of 19 October 2009 on the spectrum plan for the Olympics noted we plan to accommodate a peak of 75 wireless cameras in simultaneous use, resulting in a peak requirement for 149 channels (assuming the spectrum is contiguous and adjacent-channel use is not possible without causing harmful interference).[46] Of these, 104 channels could be found in the desirable 2-4 GHz range but only 17 in the most commonly used 2-2.7 GHz range (excluding what could be accommodated by using the 2.6 GHz band). Adding one or two more channels would therefore be a meaningful addition to spectrum availability for the Olympics.

5.34 Allocating 2010 MHz to PMSE will automatically deliver this outcome. Taking a different decision will not preclude making it available for the Olympics in specific locations on a temporary basis.

Question 10. Do you agree we should make the 2010 MHz band available for the Olympics?

[45] www.ofcom.org.uk/consult/condocs/2ghzdiscuss/temp_access/22902300.pdf.
[46] www.ofcom.org.uk/consult/condocs/london2012/statement/statement.pdf.

Section 6

Next steps

6.1 This consultation, published on 10 May 2010, closes on 21 June 2010. See annex 1 for details of how to respond.

6.2 We have chosen to allow only six weeks—a shorter period than normal—for two reasons:

- we believe interested stakeholders are already aware of the issues as a result of our previous consultations and statements; and
- it is desirable—although not essential—to conclude this consultation at the same time we take and publish decisions about future PMSE spectrum access (i.e. by July 2010 at the latest).

6.3 Following the closing date, we will decide the best way to release the 2010 MHz band for new uses.

6.4 We would be very happy to discuss the issues raised in this consultation with stakeholders. Please contact Matthew Conway on 020 7981 3082 or at matthew.conway@ofcom.org.uk if you would like to arrange a discussion.

Annex 1

Responding to this consultation

How to respond

A1.1 We invite written views and comments on the issues raised in this consultation, to be made by 5 p.m. on 21 June 2010.

A1.2 We strongly prefer to receive responses using the online web form at https://www.ofcom.org.uk/consult/condocs/release_2010_2025/howtorespond/form as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see annex 3) to indicate whether there are confidentiality issues. This response cover sheet is incorporated into the online web-form questionnaire.

A1.3 For larger consultation responses—particularly those with supporting charts, tables or other data—please email spectrum.release@ofcom.org.uk, attaching your response in Microsoft Word format, together with a response cover sheet.

A1.4 Responses may alternatively be posted to the address below, marked with the title of the consultation.

Matthew Conway
Director of Spectrum Policy (Market Enhancement)
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

A1.5 Note we do not need a hard copy in addition to an electronic version. We will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this consultation, which are listed together in annex 4. It would also help if you could explain why you hold your views and how our proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation or need advice on the appropriate form of response, please contact Matthew Conway on 020 7981 3082.

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses, ideally on receipt, on our website at www.ofcom.org.uk. If you think your response should be kept confidential, please specify what part and why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those marked as confidential, to meet legal obligations.

A1.10 Please also note copyright and all other intellectual property in responses will be assumed to be licensed to us to use. Our approach to intellectual property rights is explained further on our website at www.ofcom.org.uk/about/accoun/disclaimer/.

Next steps

A1.11 Following the end of the consultation period, we intend to decide the best way to release the 2010 MHz band for new uses, ideally at the same time we take and publish decisions about future PMSE spectrum access (i.e. by July 2010 at the latest).

A1.12 We will ideally decide the best way to release the band for new uses by July 2010 at the latest, at the same time we take and publish decisions about future PMSE spectrum access. Please note you can register to receive free mail updates alerting you to the publications of relevant Ofcom documents. For more details please see www.ofcom.org.uk/static/subscribe/select_list.htm.

Our consultation processes

A1.13 We seek to ensure responding to a consultation is as easy as possible. For more information, please see our consultation principles in annex 2.

A1.14 If you have any comments or suggestions on how we conduct our consultations, please call our consultation helpdesk on 020 7981 3003 or email us at consult@ofcom.org.uk. We would particularly welcome thoughts on how we could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumer, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or our consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is our consultation champion.

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Our consultation principles

A2.1 We have published the following seven principles that we will follow for each public written consultation.

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about whom we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Our consultation champion will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We will usually publish all the responses we receive on our website. In our statement, we will give reasons for our decisions and an account of how the views of those concerned helped shape them.

Annex 3

Response cover sheet

A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website at www.ofcom.org.uk.

A3.2 We have produced a cover sheet for responses (see below) and would be very grateful if you could send one with your response. (It is incorporated into the online web form if you respond in this way.) This will speed up our processing of responses and help to maintain confidentiality where appropriate.

A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. We therefore encourage respondents to complete their cover sheet in a way that allows us to publish their responses on receipt rather than waiting until the consultation has ended.

A3.4 We strongly prefer to receive responses via the online web form, which incorporates the cover sheet. If you are responding via email or post, you can download an electronic copy of this cover sheet in Word or RTF format from the consultations section of our website at www.ofcom.org.uk/consult/.

A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details or job title to remain confidential, please provide them in your cover sheet only so we do not have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	☐	Name/contact details/job title	☐
Whole response	☐	Organisation	☐
Part of the response	☐	If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation not to be published, can we still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand Ofcom may need to publish all responses, including those marked as confidential, to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard email text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part) and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name Signed (if hard copy)

Annex 4

Consultation questions

Demand

Question 1. Is there demand to use the band for wireless cameras?

Question 2. Is there demand for other uses of the band?

Question 3. How might demand for the band change in the foreseeable future?

Question 4. Should any wireless-camera use of the band be licence-exempt?

Question 5. Should any other use of the band be licence-exempt?

Demand only for PMSE

Question 6a. If we allocate the band to PMSE, is there good reason not to set TLCs to allow all of 2010-2110 MHz to be treated as a single band?

Question 6b. If so, what TLCs should we set?

Question 7a. If we allocate the band to PMSE, is there good reason not to provide the same security of tenure as for other PMSE-allocated bands?

Question 7b. If so, what security of tenure should we provide?

Question 8a. If we allocate the band to PMSE, is there good reason not to set fees for access on the same basis as most of the spectrum at 2-3 GHz used for wireless cameras?

Question 8b. If so, how should we set fees for access?

Other demand

Question 9a. If we do not immediately decide to allocate the band to PMSE, is there good reason not to allow temporary use for wireless cameras in line with our approach to the 2290 MHz band?

Question 9b. If so, what should we do until we make and implement our decision on the best way to release it?

Olympics

Question 10. Do you agree we should make the 2010 MHz band available for the Olympics?

Annex 5

Legal and regulatory framework

A5.1 This annex describes our functions, duties and objectives as they relate to releasing spectrum. It also provides a brief overview of the international provisions that impact on the potential future uses of spectrum in the UK.

Our functions, duties and objectives

A5.2 We make decisions within a framework defined in EU and UK law. This sets out overarching general duties that apply across all our functions, below which sit a number of specific duties.

A5.3 Following a recent review, a number of changes will be made to the EU regulatory framework.[47] Member States are required to implement them in national law by 25 May 2011. A new Body of European Regulators for Electronic Communications has also been established.[48] This annex considers the regulatory framework as it currently applies.

The duties imposed by the Communications Act 2003

A5.4 Section 3 of the Communications Act 2003[49] sets out our general duties and provides our principal duty is:

- to further the interests of citizens in relation to communications matters; and
- to further the interests of consumers in relevant markets, where appropriate by promoting competition.

A5.5 In securing the above duties, we are required to secure among other things the optimal use for wireless telegraphy of the electromagnetic spectrum and the availability throughout the UK of a wide range of electronic communication services and to have regard to the different needs and interests of everyone who may wish to use the spectrum for wireless telegraphy.

A5.6 Section 3(3) of the Communications Act provides we must in all cases have regard to the principles of transparency, accountability, proportionality and consistency in performing our principal duty as well as ensure our actions are targeted only at cases in which action is needed.

A5.7 Section 3(4) of the Communications Act requires us in performing our principal duty to have regard to a number of factors as appropriate, including the desirability of promoting competition, encouraging investment and innovation in relevant markets and encouraging the availability and use of high-speed data-transfer services throughout the UK.

A5.8 Where there is a conflict between the duties, priority must be given to the European Community requirements set out in section 4.

[47] See http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0011:0036:EN:PDF and http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:0069:EN:PDF.
[48] See http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0001:0010:EN:PDF.
[49] www.opsi.gov.uk/acts/acts2003/pdf/ukpga_20030021_en.pdf.

European Community requirements

A5.9 Section 4 of the Communications Act implements article 8 (policy objectives and regulatory principles) of the Framework Directive.[50] This sets out the objectives national regulatory authorities must take all reasonable steps to achieve. These include promoting competition in the provision of electronic communications networks and services by, among other things, encouraging efficient investment in infrastructure and promoting innovation, and encouraging efficient use of radio frequencies; and contributing to the development of the internal market by, among other things, removing obstacles to the provision of electronic communications networks and services at a European level, encouraging the interoperability of pan-European services and ensuring there is no discrimination in the treatment of undertakings providing electronic communications networks and services in similar circumstances.

A5.10 Article 8 also requires Member States to ensure national regulatory authorities take the utmost account of the desirability of making regulations technologically neutral in carrying out their regulatory tasks.

Our duties when carrying out our spectrum functions

A5.11 In carrying out our spectrum functions, we have a duty under section 3 of the Wireless Telegraphy Act 2006[51] to have regard in particular to:

- the extent to which the spectrum is available for use or further use for wireless telegraphy;
- the demand for use of that spectrum for wireless telegraphy; and
- the demand that is likely to arise in future for the use of that spectrum for wireless telegraphy.

A5.12 We also have a duty to have regard, in particular, to the desirability of promoting:

- the efficient management and use of the spectrum for wireless telegraphy;
- the economic and other benefits that may arise from the use of wireless telegraphy;
- the development of innovative services; and
- competition in the provision of electronic communications services.

A5.13 Where it appears to us any of our duties in section 3 of the Wireless Telegraphy Act conflicts with one or more of our general duties under sections 3-6 of the Communications Act, priority must be given to our duties under the latter. Section 5 of the Communications Act concerns our obligation to carry out our functions in accordance with any directions made by the Secretary of State. Section 6 concerns our duties to review regulatory burdens.

[50] http://eur-lex.europa.eu/pri/en/oj/dat/2002/l_108/l_10820020424en00330050.pdf.
[51] www.opsi.gov.uk/acts/acts2006/pdf/ukpga_20060036_en.pdf.

Granting wireless telegraphy licences

A5.14 The Wireless Telegraphy Act sets out our legal power to grant wireless telegraphy licences. Section 8(1) makes it an offence for any person to establish or use any station for wireless telegraphy or to install or use any apparatus for wireless telegraphy except under and in accordance with a licence granted by us under that section (a wireless telegraphy licence).

A5.15 Section 9(1) of the Wireless Telegraphy Act gives us the power to grant wireless telegraphy licences subject to such terms as we think fit.

A5.16 However, our broad discretion in relation to the terms that can be imposed in a wireless telegraphy licence is subject to the rule we must impose only those terms that we are satisfied are objectively justifiable in relation to the networks and services to which they relate, not unduly discriminatory and proportionate and transparent as to what they are intended to achieve (see section 9(7)).

A5.17 Under section 8(4) of the Wireless Telegraphy Act, we have the duty to exempt from licensing any use of wireless telegraphy apparatus that we consider is not likely to cause harmful interference. Licence exemptions are granted by way of regulations made under section 8(3).

Providing for the award of wireless telegraphy licences

A5.18 Under Article 5(2) of the Authorisation Directive,[52] when granting rights of use of radio frequencies (wireless telegraphy licences in the UK), Member States must do so through open, transparent and non-discriminatory procedures.

A5.19 Under Article 7(2) of the Authorisation Directive, where the number of rights of use of radio frequencies needs to be limited, Member States' selection criteria must be objective, transparent, non-discriminatory and proportionate. Section 29 of the Wireless Telegraphy Act requires us to make an order setting out the criteria.

A5.20 Within this context, we have the power under section 14 of the Wireless Telegraphy Act (having regard to the desirability of promoting the optimal use of the electromagnetic spectrum) to make regulations providing applications for the grant of wireless telegraphy licences must be made in accordance with a procedure that involves the applicants making bids for licences (e.g. an auction).

A5.21 We have broad powers under section 14 to make provision in regulations for the form of the licences and the auction procedure.

Charging fees for wireless telegraphy licences

A5.22 Under Article 13 of the Authorisation Directive, any fees imposed for rights of use of radio frequencies must reflect the need to ensure the optimal use of the resources. Such fees must be objectively justifiable, transparent, non-discriminatory and proportionate in relation to their intended purpose and take into account the objectives set out in article 8 of the Framework Directive.

A5.23 Section 12 of the Wireless Telegraphy Act permits charging for wireless telegraphy licences by enabling us to prescribe in regulations sums payable for these licences. This power enables us to recover the cost of administering and managing wireless

[52] http://eur-lex.europa.eu/pri/en/oj/dat/2002/l_108/l_10820020424en00210032.pdf.

telegraphy licences. As amended by section 38 of the Digital Economy Act 2010,[53] it also provides for the charging of fees for licences awarded by auction in specified circumstances.

A5.24 Section 13 of the Wireless Telegraphy Act permits us to recover sums greater than these if we think fit in the light (in particular) of the matters to which we must have regard under section 3, including promoting the efficient management and use of the part of the electromagnetic spectrum available for wireless telegraphy.

A5.25 The fees for most wireless telegraphy licences (including those fees we set out in order to incentivise the efficient use of the spectrum) are set out in specific regulations. The current regulations are the Wireless Telegraphy (Licence Charges) Regulations 2005 (SI 2005/1378) as amended.[54]

[53] www.opsi.gov.uk/acts/acts2010/pdf/ukpga_20100024_en.pdf.
[54] www.opsi.gov.uk/SI/si2006/20062894.htm.

Annex 6

Abbreviations

2G	Second-generation wireless telephone technology
3G	Third-generation mobile-phone standards and technology
AIP	Administered incentive pricing
BEM	Block-edge mask
BMA	Building-material analysis
CEPT	European Conference of Postal and Telecommunications Administrations
CGC	Complementary ground components
ComReg	Commission for Communications Regulation
dB	Decibel
dBi	Decibels relative to an isotropic antenna
dBm	Decibels relative to milliwatts
dBW	Decibels relative to watts
ECC	Electronic Communications Committee
EIRP	Effective isotropic radiated power
ERC	European Radiocommunications Committee
ERP	Effective radiated power
EU	European Union
FDD	Frequency-division duplexing
GHz	Gigahertz
GPR	Ground-probing radar
GSM	Global System for Mobile Communications
HSPA	High-Speed Packet Access
Hz	Hertz
IMT-2000	International Mobile Telecommunications-2000
IP	Internet protocol

ISB	Independent spectrum broker
ITU	International Telecommunication Union
kHz	Kilohertz
LTE	Long-Term Evolution
MHz	Megahertz
MIMO	Multiple inputs, multiple outputs
MNO	Mobile network operator
MOD	Ministry of Defence
MSS	Mobile satellite services
PMSE	Programme-making and special events
RA	Radiocommunications Agency
SFR:IP	Spectrum Framework Review: Implementation Plan
TDD	Time-division duplexing
TLC	Technical licence condition
UKFAT	UK Frequency Allocation Table
UMTS	Universal Mobile Telecommunications System
UWB	Ultra-wideband
WiMAX	Worldwide Interoperability for Microwave Access
WPR	Wall-probing radar