Licence Exemption of Wireless Telegraphy Devices

Candidates for 2010

Consultation

Publication date: 12 March 2010

Closing Date for Responses: 7 May 2010

Contents

Section 1

Executive Summary

1.1 This consultation sets out a range of proposals to extend and modify the existing arrangement for licence exemption in the UK. These include allowing the use of new technologies without the need to hold a licence and removing restrictions that are no longer required for existing licence-exempt devices.

1.2 Under section 8(1) of the Wireless Telegraphy Act 2006 (the "WT Act"), it is an offence to establish, install or use equipment to transmit without holding a licence granted by us, unless the use of such equipment is exempted. Under the section 8(4) of the WT Act, we are required to exempt the establishment, installation and use of a station or apparatus if it is not likely to involve undue interference.

1.3 To reflect developments in the radiocommunications industry we regularly review our regulations to ensure that citizens and consumers can benefit from these technologies. This consultation document contains a number of proposals to change the arrangements for licence exemption in the UK and include:

- Measures to liberalise current licence exemption criteria for:
    - High Density Fixed Satellite Services (HDFSS);
    - Railway Level Crossing Radar Sensor Systems;
    - Underwater system use below 30 MHz; and
    - A number of short-range devices (SRDs) in order to harmonise, on a voluntary basis, with Europe where such measures are viewed as beneficial.
- Information on upcoming European Commission (EC) Decisions which will be binding on the UK and will be published in the near future; and
- Information on other related policy proposals and decisions that may be included in future regulations.

1.4 An impact assessment for the proposals contained in this document is available in Annex 5 to this document. Further copies may be obtained from www.ofcom.org.uk or from Ofcom at Riverside House, 2a Southwark Bridge Road, London SE1 9HA. Comments on the Proposed Regulations are invited by **5pm** on **7 May 2010**. Subject to consideration of responses we intend to bring the new regulations into force by August 2010.

Section 2

Introduction

What is Licence Exemption

2.1 Every day, most of us use radio devices that do not need a licence. These licence-exempt devices range from wireless headsets, car key-fobs and baby monitors to garage door openers and WiFi systems. Licence-exempt applications are also used in industry, including anti-theft systems in shops, identity cards that activate doors and in sensors used in industrial processes.

2.2 We are responsible for authorising civil use of the radio spectrum and achieve this by granting wireless telegraphy licences under the WT Act and by making regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 8(1) of the WT Act, it is an offence to establish, install or use equipment to transmit without holding a licence granted by us unless the use of such equipment is exempted. We can exempt the establishment, installation or use of wireless telegraphy equipment by making regulations under section 8(3) of the WT Act. Under section 8(4) of the WT Act, we must make regulations to exempt equipment if its installation or use is unlikely to involve undue interference to other users.

2.3 In making a device exempt from licensing we specify the characteristics of the equipment that can be used. A key issue is a device's transmitting power; radio signals from high-powered devices travel further, increasing the chances of interference with others using the same frequencies. If this occurs, the frequencies will become of limited use (many licence-exempt devices are also commonly referred to as low power or SRDs).

2.4 Users of licence-exempt devices need to be aware that there are no guarantees that the spectrum will be free of interference. However, by defining the maximum transmit power, along with other characteristics we can keep the probability of interference low.

Licence exemption proposals

2.5 This consultation contains proposals to change the existing regulations for a number of reasons:

- Introduce new technologies;
- Support the development of innovative radio technologies and applications. The document contains proposals to modify existing arrangements to reflect the evolution of existing technologies; and
- Implementing on a voluntary basis some measures to harmonise the UK regulations with other European countries in order to support the single market.

2.6 The detail of, and rationale for, each of the new exemption propositions is explained more fully in section 3 of this document. In addition further detailed technical information is provided, where appropriate, in additional supporting documents.

Document Structure

2.7 The document is structured as follows:

- Section 3 outlines our proposals to modify the current regulations for licence exemption;
- Section 4 provides information on recent and upcoming EC Decisions that may require changes to exemption regulations;
- Section 5 relates to other related Ofcom policy work that may require changes to exemption regulations;
- Annexes 1 – 3 explain our consultation principles and how to respond to this consultation;
- Annex 4 sets out the consultation questions; and
- Annex 5 presents an impact assessment on the proposed changes.

Next steps

2.8 We welcome stakeholder feedback to this consultation document. The deadline to submit responses to us is **5pm** on **7 May 2010**. We expect to release a Statement on this consultation in May 2010, having taken into account stakeholder responses to our proposals.

2.9 It is a statutory requirement that we give one month's notice of any proposed regulations and at the end of this period we will seek to make and bring the regulations into force. It is our current expectation that the new regulations will be in force by August 2010.

Section 3

Proposed changes to licence exemption

Introduction

3.1 We are proposing to amend the regulations in order to allow a new type of equipment to operate on a licence-exempt basis or to amend arrangements for frequency bands and equipment that are already subject to licence-exemption.

New technology introduction

3.2 When appropriate we introduce measures to permit the use of a range of new technologies and novel radio applications of radio without the need for users to obtain a licence from us. Qualification for exemption is related to the nature of the equipment and frequencies it uses. There are a number of factors influencing whether undue interference occurs, these are:

- the particular frequency assigned for transmission;
- the power of transmission;
- the use of the equipment; and
- the compliance of equipment with agreed national or international standards (whichever takes precedence).

3.3 Most of the technical studies undertaken to understand whether devices can share frequencies with one another are carried out by the Conference of Postal and Telecommunications Administrations (CEPT). CEPT is the European regional organisation dealing with postal and telecommunications issues and presently has members from 47 countries. It is made up of representatives of the postal and telecommunications administrations of European countries including Ofcom for UK radio matters. In addition to its role advising the EC on radio spectrum matters, CEPT produces a range of other outputs that inform the development of spectrum management across CEPT member countries. It is on the basis of much of this work that devices can be considered for licence exemption.

Railway Level Crossing Radar Sensor Systems

Background

3.4 There are over 7600 level crossings across the UK rail network. Each year there are a reported 2000 incidents[1] involving misuse of crossings, some of which unfortunately lead to injuries and fatalities. To improve the safety on railway level crossings technologies have been developed in order to warn oncoming trains of any potential hazards ahead.

3.5 Railway level crossing radar sensor systems are designed to detect objects located between the gates of a level crossing. They then send information as to whether a crossing is clear to an approaching train. If an obstacle is detected information is

[1] Network Rail statistics

passed through the system to alert the driver who is able to take avoidance actions. As more level crossings become fully automated, these systems are designed to increase the safety for pedestrians, vehicles and train passengers.

Proposed detail

3.6 We process to permit the use of Railway Level Crossing Radar Sensor Systems in the 24.100 to 24.350 GHz frequency band. We propose to set a maximum power limit of 500 mW e.i.r.p. These devices are only to be installed at railway level crossings. In addition we are also proposing six exclusion zones surrounding Radio Astronomy sites.

3.7 As the location of railway level crossings are fixed at a known location we believe that it is unlikely that these devices would cause undue interference to Radio Astronomy sites providing that exclusion zones (see Figure 1) are put in place.

Figure 1: Radio Astronomy exclusion zones

Site	NGR	Exclusion zone
Jodrell Bank	SJ 79650 50950	20 km
Cambridge	TL 39400 54000	20 km
Defford	SO 90200 44700	20 km
Darnhall	SJ 64275 62265	20 km
Knockin	SJ 32855 21880	20 km
Pickmere	SJ 70404 76945	20 km

Source: Ofcom

3.8 In our regulations “railway” will have the meaning given by Article 3 of Regulation (EC) No 91/2003 of the European Parliament and of the Council of 16 December 2002 on rail transport statistics.

Impact

3.9 Potentially these devices could interfere with Radio Astronomy sites. Prior to publication of this proposal we have been working with the Radio Astronomy community regarding these devices. The exclusion zone limits were based on measurements to determine the out of band emissions within the nearby radio astronomy band of 23.6 to 24.0 GHz. The radio astronomy interference thresholds are listed in the ITU recommendation RA.769-2[2]. The measurements show that for the radar configured to 24.225GHz centre frequency an exclusion distance of 20km will provide adequate protection to radio astronomy. We may review these limits at a later date to see whether they can be reduced or the effects of interference could be mitigated.

[2] http://www.gb.nrao.edu/IPG/ITURRA769.pdf

3.10 In addition to Radio Astronomers the Home Office also operate systems in this frequency band. We understand that tests have been carried out between these systems and that the Home Office has agreed to their deployment.

Benefits

3.11 We believe that these systems would help to improve the safety of pedestrians, vehicles and railway passengers travelling in the UK.

Implementation

3.12 To implement this proposal we would update the regulations and create a new IR 2080. A copy of the draft IR 2080 can be found on our website[3].

Question 1) Do you agree with our proposal to permit railway level crossing radar sensor systems to operate in the UK, on a licence exempt basis, providing that exclusion zones are put in place to protect Radio Astronomy sites?

Changes to current exemption regulations

Introduction

3.13 As part of our review of licence exemption we look at the technical restrictions currently placed on devices and see if it possible to remove or reduce them. Any decision taken to alter technical restrictions is based on a better understanding of the technologies involved and how they can share with other users. We propose to change the technical parameters for the following licence exempt devices:

- HDFSS;
- SRDs operating underwater below 30 MHz; and
- A number of small harmonisation changes to SRDs.

HDFSS

Background

3.14 HDFSS is a generic term for satellite technology designed to provide two-way broadband Internet and multi-media access. It includes all applications of qualifying earth stations[4] operating in the Fixed Satellite Service (FSS) (including Very Small Aperture Terminals (VSATs)) and uses small, low-power earth stations and antennas (often less than one metre), allowing for flexible, rapid and widespread deployment of networks. The potential application of HDFSS in rural areas of the UK should help to deliver broadband, interactive digital television and High Definition (HD) television to those areas not served by terrestrial delivery.

3.15 Currently earth stations transmitting in the bands 27.5 to 27.8185 GHz, 28.4545 to 28.8265 GHz and 29.4625 to 30 GHz, with an effective isotropic radiated power (e.i.r.p.) less than or equal to 50 dBW, are exempt from individual licensing. Licence exemption was proposed as the appropriate method of authorisation on the basis

[3] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/draft_ir/
[4] Any terminal with an e.i.r.p. ≤ 50 dBW in the designated bands.

that HDFSS equipment used in the identified bands was unlikely to cause undue interference to other users of the radio spectrum when operating in accordance with specified technical parameters. The European Communications Committee (ECC) Decision ("ECC/DEC") (06)03 and ECC/DEC (05)01[5] identified a number of technical parameters necessary to ensure the efficient use of spectrum and avoid interference to other spectrum users. These were arrived at after a detailed sharing analysis of the possible impact of satellite terminal transmissions[6].

3.16 ECC/DEC (06)03[7] recommends licence exemption of terminals transmitting in the satellite exclusive bands of 29.5 to 30 GHz with an e.i.r.p. of between 34 to 60 dBW. In 2007 when we last consulted on this issue[8], some stakeholders considered that it would be premature to consider e.i.r.p. levels higher than 50 dBW, as advocated in ECC DEC (06)03. We understand that these stakeholders have now reconsidered their position.

Proposed details

3.17 We are proposing to increase the e.i.r.p. permitted for uncoordinated earth stations in the bands 27.5 to 27.8185 GHz, 28.4545 to 28.8265 GHz and 29.4625 to 30 GHz to less than or equal to 55 dBW.

Impact

3.18 We do not consider that increasing the e.i.r.p. limit from 50 dbW to 55 dBW would negatively impact existing users. The bands are currently open to coordinated Satellite Earth Stations operating at higher radiated powers which will still be subject to site clearance and the requirement to have an Earth Station Network or Permanent Earth Station licence. Because both types of terminal use frequencies are assigned and coordinated by the space station operators, no undue interference is expected to occur between the co-located, co-frequency earth stations. As such, the use by coordinated earth stations can continue and these are not expected to face undue interference from the introduction of the increased e.i.r.p. for licence exempt uncoordinated earth stations.

3.19 In particular we do not expect that the increased e.i.r.p. for licence-exempt satellite earth stations will prevent use of the band by other applications that can operate on a detect-before-transmit (cognitive) basis to avoid interference from satellite terminals.

3.20 In our decision we had to weigh up the benefits to citizens and consumers of exempting higher power earth station terminals whilst taking into the account the impact this would have on aeronautical services in the vicinity of airfields. Allowing even higher power earth stations would have led to the imposition of coordination zones surrounding airfields of up to 4 km, as outlined in ECC Decision (06)03. This would increase the cost and complexity to stakeholders of deploying such systems. It should be noted that earth station terminals transmitting with e.i.r.p. greater than 55 dBW in the bands in question can be authorised under the Earth Station Network or Permanent Earth Station licence.

[5] www.erodocdb.dk/docs/doc98/Official/Pdf/ECCDec0501.pdf
[6] ECC Report 66 http://www.ero.dk/documentation/docs/doccategory.asp?catid=4&catname=ECC/ERC/ECTRA%20Reports
[7] http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0603.PDF
[8] http://www.ofcom.org.uk/consult/condocs/wtle/wtle.pdf

Benefits

3.21 These changes will further facilitate the deployment of small FSS earth stations providing broadband internet and multi-media access to users. The changes will provide an increase in the return speeds available to home users and small and medium size businesses, as well as improving system performance and service quality. In particular this could benefit consumers not served by conventional terrestrial networks, such as those in some rural areas of the UK, enhancing the ability to deliver broadband to those areas not served by terrestrial delivery.

Implementation

3.22 The appropriate changes will be made to Radio Interface (IR) 2066 to include the revised maximum e.i.r.p. In order to facilitate compatibility with avionic equipment we propose to retain text in the informative part of IR 2066. This asks that the Civil Aviation Authority (CAA) or the appropriate Airport authority, prior to installation and operation of HDFSS within the perimeter fence of airfields, be informed. A list of the relevant airfields and contact information will be included in an Annex to the IR. A copy of the draft IR 2066 can be found on our website[9].

Question 1) Do you agree with our proposal to exempt users of HDFSS equipment operating with e.i.r.p. no greater than 55 dBW in the 27.50 to 27.8185 GHz, 28.4585 to 28.8265 GHz and 29.4625 to 30 GHz bands from the need to possess a wireless telegraphy licence?

Exemption of underwater communications below 30 MHz

Background

3.23 Underwater radiocommunication systems generally only work successfully at very low frequencies. Electromagnetic propagation through water is very different from propagation through air because of water's high permittivity and electrical conductivity. In general, propagation distance decreases with increase in radio frequency and the physical characteristics of water compound this effect.

3.24 Presently all measured limits are through the air and do not take into consideration attenuation through other medium such as water. Given the high attenuation through water and the reflection of radio signals at the water-air boundary, there is the potential to permit higher power devices to operate below the waterline, while ensuring emissions seen from such devices above the waterline remain within present emission limits.

Proposed detail

3.25 We propose to permit higher power limits for underwater apparatus in the 9 to 30,000 kHz frequency band. This should enable the use of apparatus for diver to diver and underwater telemetry communications. The present authorisation for licence-exempt SRDs operating in this band can be found in IR 2030 table 3.12[10].

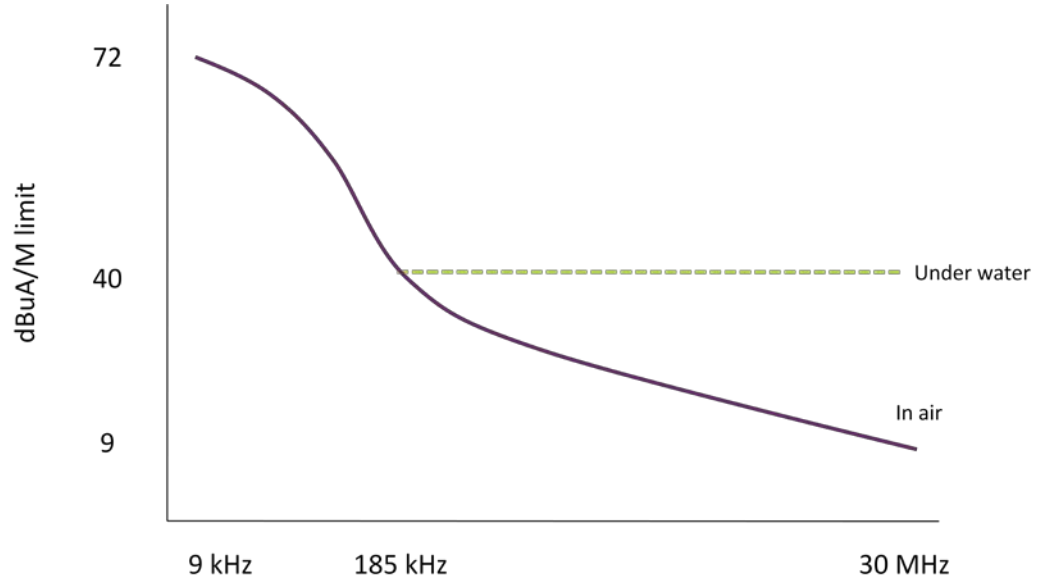
3.26 We propose to set a maximum power limit, when operating under the waterline, of 40 dBuA/m. We would envisage that the power be measured at a distance of 10m.

[9] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/draft_ir/
[10] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/IR2030final.pdf

Devices would be required to incorporate measures to prevent the in-air power transmission being above what is allowed for licence-exempt devices operating in this frequency band. A pressure sensor or similar mechanism that turned off the transmitter when above the waterline may prove to be an effective way of manufacturers ensuring apparatus meets this requirement.

3.27 Power limits for current licence exempt inductive devices vary across this band from 72 dBuA/m measured at 10 metres, down to -5 dBuA/m measured at 10 metres. Below 185 kHz the present power limitation is all above 48 dBuA/m measured at 10 metres. We believe that the majority of underwater devices will operate in these bands and are allowed under the present regulations. However, devices operating above 185 kHz, where the in-air power limit falls below 40 dBuA/m, will be able to take advantage of the higher power limit, providing a mechanism within that equipment prevents excessive in-air emissions. Figure 2 below provides a simplified account of how these proposals would look.

Figure 2: Underwater licence exemption limits



Source : Ofcom

Impact

3.28 As we are not changing the in-air power limits for these devices, we do not believe that this proposal will impact on other systems or lead to an increase in interference to existing users.

3.29 The Ministry of Defence (MoD) operates a high power underwater radiocommunications system. The MoD has been consulted about these proposals and agreed them on the basis that our IR 2030 displays an informative note advising manufacturers and users of the in-band high power MoD transmissions.

Benefits

3.30 Low power radio devices could be used for voice or data communication between divers or between divers and fixed infrastructure. Users would be able to use underwater radio communications over a wider bandwidth than presently permitted. This should enable higher speed communications and data transfers. It also meets

our duties under section 8 of the WT Act, to licence exempt where there is no likelihood of undue interference.

Implementation

3.31 To implement this liberalisation measure we would update the regulations and the associated IR 2030. The proposed change would be a note to the existing IR 2030 Inductive applications Table, explaining the circumstances where the power limit may be increased, when operating underwater. The current in-air technical and operating conditions described above and in IR 2030 would continue to apply and be enforced following licence exemption. A copy of the draft IR 2030 can be found on our website[11].

3.32 There are presently no European Technical Standards Institute (ETSI) Equipment Standards that would allow a manufacturer to simply place compliant apparatus on the market in the EU. Any manufacturer of apparatus would need to demonstrate that their product met the essential requirements of Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive 1999/05/EC[12], particularly in demonstrating that any device is incapable of emitting a signal above the waterline that exceeds the authorised power limitations. It is however anticipated that if this technology becomes successful that ETSI standardisation measures will be completed by this industry sector.

Question 3) Do you agree with our proposal to permit underwater SRD systems to operate in the UK, providing in-air emissions meet the present limitations for licence exempt use?

Harmonisation of SRDs and general upkeep

Background

3.33 Where the parameters of non-specific SRDs have been liberalised by EC Decisions, these have been transposed precisely into UK regulations. This has led to some specific-SRD allocations now incorporating restrictions not present in non-specific apparatus operating in the same frequency band. These restrictions are therefore no longer appropriate and should be removed.

3.34 The present equipment parameters for licence-exempt use of SRDs are detailed in IR 2030 dated September 2008. In addition to the IR, other technical parameters have been set out in regulations. Since publication of IR 2030 and the regulations, there have been ongoing amendments to standards that need to be incorporated into our legislation.

3.35 Also, the present tabular format of IR 2030 is not consistent with the proposed format of the amendment to EC Decision 2006/771/EC[13]. Amending the format of the IR 2030 to the common European format would make transposition of further amendment easier to ensure and easier to compare with the regulation of other administrations.

[11] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/draft_ir/
[12] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1999:091:0010:0028:EN:PDF
[13] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:312:0066:0070:EN:PDF

Proposal details

3.36 As part of this process we propose to remove restrictions from the SRD allocations listed below. Some of these changes would remove restrictions on specific devices where similar restrictions have previously been removed from Non-specific SRD allocations. Other measures bring the UK in line with the rest of Europe by introducing harmonisation measures as set out in CEPT Report 70-03[14].

3.36.1 Liberalise power restrictions below 90 kHz. We have increased the permitted power for Inductive Devices in the 60.25 to 70 kHz band to 72 dBuA/m from the present 69 dBuA/m limit and in the 70 to 90 kHz band to 72 dBuA/m from the present 48 dBuA/m limit.

3.36.2 Liberalise the 24.05 to 24.15 vehicle radar to permit an additional four alternative sweep rate conditions.

3.36.3 Remove channel restrictions for 2.4 GHz and 5.8 GHz Wireless Cameras, where these restrictions have been previously removed from the Non-Specific SRD regulations.

3.36.4 Remove airborne restrictions for all technologies at 2.4 GHz and 5.8 GHz, where these restrictions have been previously removed from the Non-Specific SRD regulations; and for Wireless Access Systems at 5 GHz.

3.36.5 In the Non-Specific SRD band 869.3 to 869.4 MHz, remove the unnecessary requirement for an unspecified “channel access protocol”.

3.36.6 Remove the caveats on channel spacing/bandwidth in paragraph 3.6 of the September 2008 version of IR2030, as it may be possible for equipment to operate in other ways without causing undue interference. The applicable ETSI standard will contain the appropriate channel spacing.

3.37 We also propose to amend the informative part of IR 2030 to ensure the latest references to appropriate standards are recorded for all the devices listed. We have also aligned the names of technologies with CEPT and ETSI definitions. This does not affect the regulatory requirements for these devices and includes:

- creating new categories for Animal Implantable Devices, Active Medical Implants and 5 GHz Wireless Access Systems (WAS); and
- replacing Movement Detection with the new term Radiodetermination and Hearing Aids with Assistive Listening Devices.

3.38 As part of our proposal we are going to include into IR 2030 the technical parameters set out in Statutory Instruments for Radio Frequency Identification (RFID) and SRDs. This will enable stakeholders to find the necessary technical information in one document. We have also removed references to the SIs for Automotive Short Range Radar in the 24 GHz and 79 GHz bands.

3.39 We also noted some small corrections that we have incorporated into the draft IR 2030, these include:

- correcting the magnetic power limit for metal detectors from dBuV to dBuA;

[14] http://www.erodocdb.dk/

- adding “e.i.r.p.” to the power limit for Road Transport and Traffic Telematics (RTTT) apparatus at 76 to 77 GHz for clarity and consistency;
- removing duplication of allocations of Non-specific SRD in the 49.9 MHz band and 40.66 to 40.7 MHz band;
- specifying the bandwidth for High Frequency Railway applications;
- adding airborne use to all Assistive Listening Devices (hearing aids) designations;
- removing Industrial/Commercial Telemetry and Telecommand in the 869.4 to 869.65 MHz band as this duplicated existing authorisation of Non-specific SRDs; and
- standardising the use of the terms “duty cycle limit” and “channel spacing”.

Impact

3.40 We do not believe that the changes proposed to update IR 2030 will have a negative impact on the types of apparatus that can be used in the UK.

Benefits

3.41 By aligning our IR 2030 with the common format adopted by Member States we believe that it would enable stakeholders to easily compare the regulations on use in the UK to the parameters in other Member States. It would also make it easier for us to transpose any changes into UK legislation.

3.42 In updating the informative information on the relevant and current standards, used in defining equipment type, we believe that this will make it easier for stakeholders to find the necessary information for compliance purposes.

Implementation

3.43 We propose to implement these changes by amending IR 2030. A copy of the draft IR 2030 can be found on our website[15].

Question 4) Do you agree with our proposal to remove restrictions where a more liberal duplication of the regulations exists elsewhere in the UK Licence Exemption regulations and incorporate all relevant information for licence exempt SRD into a single Interface requirement document?

[15] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/draft_ir/

Section 5

Recent and upcoming EC Decisions

Introduction

4.1 The following section refers to measures recently or in the process of being adopted by the EC. Implementation measures are normally prepared in collaboration with CEPT and adopted by the EC with the assistance of the Radio Spectrum Committee (RSC) which is a committee of Member States chaired by the EC. The following section is for information only and we are not seeking responses in this document on these proposals.

- EC Decision on Mobile Communications on board Vessels;
- EC Decision on SRDs;
- EC Decision on harmonisation of the 900 MHz and 1800 MHz frequency bands; and
- EC Decision on Ultra-wideband (UWB) devices.

EC Decision on Mobile Communications onboard Vessels

4.2 The EC has drafted proposals to harmonise the spectrum usage conditions for mobile communication systems, based on GSM-900/GSM-1800 technology, used on-board vessels (MCV). The framework is required to allow land-based Global System for Mobile communications (GSM) and Universal Mobile Telecommunications System (UMTS) networks operating in the 900 MHz and 1800 MHz frequency bands not to be disrupted by MCV systems. This follows a similar Decision on allowing Mobile Communications onboard Aircraft[16].

4.3 MCV systems enable the use of GSM-based mobile terminals in areas are not covered by land-based transmitters. MCV systems consist of an onboard pico-cell base station and an onboard Network Control Unit (NCU). It is to this system that mobile terminals used by passengers would connect.

4.4 The NCU is used to prevent the mobile stations within the ship from accessing the land-based networks and ensure that the mobile stations do not transmit any signal without being controlled by the onboard GSM system. The NCU achieves this by raising the radio-frequency noise floor within the mobile frequency bands to a level that blocks the signal from terrestrial networks. As the mobile terminal cannot receive a land-based control channel, it will not be able to register. As a consequence, it will remain in an idle state and not transmit. When the mobile receives an MCV control channel, which is transmitted at a higher level than the NCU signal, it will come out of its idle state.

4.5 Mobile terminals are already licence exempt when connected to land-based networks. When we are required to implement the decision we are likely to create a new exemption to allow terminals to connect to an MCV service on a licence-exempt basis providing they meet the technical requirements as set out in an associated IR.

[16] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:098:0019:0023:EN:PDF

4.6 The EC provided a mandate to CEPT on 8 July 2008 to identify the technical and operational conditions required to ensure the avoidance of harmful interference from GSM systems used on-board vessels in the 900 MHz and 1800 MHz frequency ranges in the territorial seas of Member States to the operation of existing land-based mobile networks, and to ensure that land-based mobile terminals are not connected to such a system when it is in use within the territorial seas. CEPT produced its final report (RSCOM09-27)[17] in response to the EC mandate on MCV. We are expecting the MCV Decision to be published the first half of 2010.

EC Decision on SRDs

4.7 In November 2006 the EC adopted the Commission Decision of 9 November 2006 on harmonisation of the radio spectrum for use by short-range devices (2006/771/EC)[18]. (the "SRD Decision")[19]. This harmonised across the European Union (EU) the technical conditions for a wide range of SRDs. These devices are usually mass-market, low power, portable products that can easily be taken across countries' borders. Differences in the technical conditions in individual countries would prevent the free movement of goods, increase the costs for producers and potentially cause harmful interference. The SRD Decision is revised yearly due to changes in technologies. To advise the EC, there is a permanent Mandate to the CEPT to suggest revisions into this annual process.

4.8 Due to the low power and short range of SRDs they can share frequencies with a number of other devices. It is for this reason that the SRD Decision instructs Member Sates these devices should not require a licence. However, this means in practice individual devices operating at a particular location cannot be guaranteed the same protection from interference enjoyed by licensed users and manufacturers must ensure the devices operate in a way that avoids harmful interference to other SRDs.

4.9 For the 2009 revision, which we expect would need to be implemented into national regulations by the autumn of 2010, CEPT has made its suggestions in the format of CEPT Report 35[20] published on 30 October 2009. Although the EC has the right to modify the CEPT proposals, they are generally accepted with little amendment by the RSC. The RSC is due to vote on this proposal in March 2010.

4.10 Within CEPT Report 35, there are no proposals for new spectrum for SRD in the UK the changes are modifications to existing licence-exempt SRDs. Our current understanding of the proposed changes are:

4.10.1 The addition of a specific note, relating to all Licence Exempt SRD, making it explicit that adjacent frequency bands can be considered as a single frequency band provided the specific conditions of each frequency band are met.

4.10.2 For medical devices, operating in the 401 to 402 MHz and 405 to 406 MHz bands, permitting wider bandwidth operation up to 100 kHz.

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17 http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/_document_storage/rsc/rsc28_public_docs/rscom09-27_cept_mcv.pdf

18 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:312:0066:0070:EN:PDF

19 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:312:0066:0070:EN:PDF

20 http://www.erodocdb.dk/Docs/doc98/Official/Pdf/CEPTRep035.pdf

4.10.3 For Non-Specific SRDs, removing any remaining analogue voice and digitised voice/audio/video restrictions from the 433.05 to 434.79 MHz .

4.10.4 Increase the Duty Cycle limit in the 869.7 to 870 MHz band from 0.1% to 1% for Non-specific SRDs.

4.10.5 Replace the indoor/outdoor power restrictions with a single power of 40 dBm for Wideband Data Transmission Systems (WBDTS) in the 57 to 66 GHz band, note outdoor fixed installations will still not be permitted.

4.11 The removal of analogue voice restrictions is based on the inherently low duty cycle of voice and was considered by CEPT to cause no more harm than the present authorised apparatus. The removal of restrictions of digitised voice/audio/video signals was equally based on bringing into line these signals with the presently authorised telemetry signals. No additional harm is therefore envisaged.

4.12 The liberalisation of the 57 to 66 GHz band is based on the likely usage scenario where mobile (battery powered) use is unlikely at high power levels. The revised ECC Compatibility Report 113[21] of May 2009 was clear that, outdoor use at the higher power limit could be authorized except for fixed outdoor installations. The liberalisation of channel addition for the ultra low power (25 micro-Watt) medical devices in the 400 MHz band is unlikely to have any detectable impact due to the very low power of these implants.

4.13 As a Member State we are required to implement the SRD Decision within the time limits set by the EC. We expect to introduce these liberalisation measures for licence-exempt SRDs by adding them into exemption regulations and IR 2030.

4.14 We are expecting the SRD Decision to be published the first half of 2010. Due to the timing of the SRD Decision we envisage that the necessary licence exemption changes would be incorporated into the regulations proposed in this document.

EC Decision on harmonisation of the 900 MHz and 1800 MHz frequency bands

4.15 The EC made the "Directive 2009/114/EC of the European Parliament and of the Council amending Council Directive 87/372/EEC on the frequency bands to be reserved for the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community"[22]. This required Member States to make the 880 to 915 MHz and 925 to 960 MHz frequency bands (the 900 MHz band) available for GSM and UMTS systems, as well as for other terrestrial systems capable of providing electronic communications services that can coexist with GSM systems.

4.16 In addition, the EC has adopted the "Commission Decision of 16 October 2009 on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community"[23]. This required Member States to allow the use of UMTS and to other terrestrial systems capable of providing electronic communications services that can coexist with the GSM in the 900 MHz and 1800 MHz bands.

[21] http://www.erodocdb.dk/Docs/doc98/Official/Pdf/ECCRep113.pdf
[22] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:274:0025:0027:EN:PDF
[23] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:274:0032:0035:EN:PDF

4.17 With the advent of the Commission Decision 2009/766/EC and European Directive 2009/114/EC which came into force in October and November 2009 respectively, we feel it is appropriate to include the use of UMTS 900 MHz and UMTS 1800 MHz terminal equipment in the Proposed Regulations.

EC Decision on UWB

4.18 Ultra-wideband (UWB) is a generic term for technologies typically characterised by the emission of very low power radiation spread over a very large radio bandwidth. This is unlike other wireless systems, which use spectrum in discrete narrow frequency bands. UWB can transfer large amounts of data wirelessly over short distances, typically less than ten metres. Using mitigation techniques multiple pieces of UWB equipment are able to operate in the same area.

4.19 The European Commission Decision of 21 April 2009 (2009/343/EC) (the "UWB Amendment Decision")[24] amended Decision 2007/131/EC on allowing the use of the radio spectrum for equipment using ultra-wideband technology in a harmonised manner in the Community (the "UWB Decision").[25] We partly implemented the UWB Amendment Decision by making the Wireless Telegraphy (Ultra-wideband Equipment) (Exemption) Regulations 2009 that came into force on 15 October 2009.

4.20 For generic UWB and equipment that is used in an automotive vehicle or a railway vehicle the UWB Decision requires us to reduce the power limit in the 4.2 to 4.8 GHz band. The maximum mean e.i.r.p density (dBm/MHz) decrease from -41.3 dBm/MHz to -70 dBm/MHz. Maximum peak e.i.r.p. density (dBm/50MHz) decreases from 0 dBm/50MHz to -30 dBm/50MHz.

4.21 We will make the necessary changes to our legislation in order to incorporate these requirements.

[24] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:105:0009:0013:EN:PDF
[25] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:055:0033:0036:EN:PDF

Section 6

Other policies

Introduction

5.1 In addition to the licence exemption proposals in this document there are a number of other separate policy proposals, consultations and recent decisions that require or may require changes to the exemption regulations. This section is for information only and we are not seeking responses in this document for these proposals. We advise that stakeholders wishing to comment on these proposals should do so as part of the relevant consultation process.

- 2 GHz Satellite terminal transmission limits; and
- FWS in the 59 - 64 GHz band exemption.

2 GHz Satellite terminal transmission limits

5.2 Mobile Satellite Services (MSS) use portable terminals, which enable users to transfer data and voice information using satellite communications networks. The most common type of application for these devices is satellite phones and satellite broadband connections.

5.3 The EU has made a number of decisions that will provide Europe with new mobile satellite services in the 2 GHz MSS bands (1980 to 2010 MHz and 2170 to 2200 MHz). The first, harmonised use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing MSS[26]. Another provides a process for the selection and authorisation of systems providing MSS[27]. The third decision completed this process and selected the MSS operators[28]. These Operators are now authorised to provide their communication services via satellite or via Complementary Ground Components (CGC) which is made up of a network of terrestrial base stations.

5.4 We will be consulting on proposals to set the transmission limits for terminals that operate to the satellite or CGC base station component of the MSS network. Depending on the outcome of this consultation we may include the proposals in the Proposed Regulations.

FWS 59 - 64 GHz exemption

Background

5.5 On 16 July 2009 we published a consultation document on making spectrum in the 59 to 64 GHz band available for Fixed Wireless Systems (FWS)[29]. The consultation also included a proposal to combine the 59 to 64 GHz band with the existing 57 to 59 GHz licence-exempt band under one overall licence exempt authorisation

[26] RSC Decision 2007/98/EC
[27] Decision 626/ 2008/EC adopted jointly by the European Parliament and Council
[28] 2009/449/EC
[29] http://www.ofcom.org.uk/consult/condocs/59_64ghz/condoc.pdf

approach to create a new contiguous block of spectrum; 57 to 64 GHz; the '60 GHz' band.

5.6 On 11 December 2009 we published our decision to open the 60 GHz band for FWS and to combine this with the existing 57 to 59 GHz band under one overall licence exempt authorisation approach for FWS. This will create one contiguous and flexible licence-exempt block of spectrum providing 6.8 GHz of available bandwidth (57.1 to 63.9 GHz). The large bandwidth available makes the new 57.1 to 63.9 GHz band (the 60 GHz band) suitable for very high capacity, short hop FWS applications e.g. 100MBit/s to 1GBit/s Ethernet systems. The technical limits are set out in draft IR 2078[30].

5.7 The 59 to 64 GHz band is jointly managed by Ofcom for Fixed Service applications and the MoD for Mobile and Radiolocation applications. In order to protect MoD radiolocation systems we are to introduce three exclusion areas from the licence exemption. The areas are listed in Figure 3.

Figure 3: 59 - 64 GHz band licence exempt exclusion zones

Site Name	Site Location	Radius of exclusion zone from the centre of site location
Site 1	57° 21' 3.6",-07° 23' 36.6"	6 km
Site2	51° 37' 16.8",-04° 58' 21"	6 km
Site 3	52° 38' 1.8", -00° 36' 22.8"	6 km

Source: Ofcom

5.8 This decision will be implemented into the Proposed Regulations.

[30] http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/draft_ir/IR_2078.pdf

Annex 1

Responding to this consultation

How to respond

A1.1 We invite written views and comments on the issues raised in this document, to be made **by 5pm on 7 May 2010**.

A1.2 We strongly prefer to receive responses using the online web form at https://www.ofcom.org.uk/consult/condocs/devices/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 or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data – please emial licence.exemption@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

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

Paul Chapman
Floor 3
Spectrum Policy Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7981 3921

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom 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 document, which are listed together in Annex 4. It would also help if you can 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 Paul Chapman on 020 7981 3069.

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 on our website, www.ofcom.org.uk, ideally on receipt. If you think your

response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify 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 will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

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

Next steps

A1.11 Following the end of the consultation period, we intend to publish a statement in June 2010.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 We seek to ensure that responding to a consultation is 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 e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's 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. 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 have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape them.

Annex 3

Consultation 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, www.ofcom.org.uk.

A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this 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. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet 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 that we don't 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 ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

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 Ofcom 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 that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail 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 question

A4.1 A list of the questions proposed in this consultation can be found below.

Question 1) Do you agree with our proposal to permit railway level crossing radar sensor systems to operate in the UK, on a licence exempt basis, providing that exclusion zones are put in place to protect Radio Astronomy sites?

Question 2) Do you agree with our proposal to exempt users of HDFSS equipment operating with e.i.r.p. no greater than 55 dBW in the 27.50 to 27.8185 GHz, 28.4585 to 28.8265 GHz and 29.4625 to 30 GHz bands from the need to possess a wireless telegraphy licence?

Question 3) Do you agree with our proposal to permit underwater SRD systems to operate in the UK, providing in-air emissions meet the present limitations for licence-exempt use?

Question 4) Do you agree with our proposal to remove restrictions where a more liberal duplication of the regulations exists elsewhere in the UK licence exemption regulations and incorporate all relevant information for licence exempt SRD into a single Interface requirement document?

Annex 5

Impact Assessment

Introduction

A5.1 In accordance with Government practice, where a statutory regulation is proposed, a Regulatory Impact Assessment ("RIA") must be undertaken. The analysis presented here, when read in conjunction with the rest of this document, represents an RIA as defined by section 7 of the Communications Act 2003 ("the Communications Act").

A5.2 You should send us any comments on this RIA by the closing date for this consultation. We will consider all comments before deciding whether to implement our proposals.

A5.3 RIAs provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making and are commonly used by other regulators. This is reflected in section 7 of the Communications Act, which means that we will generally carry out impact assessments where proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in our activities. However, as a matter of policy we are committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. In accordance with section 7 of the Communications Act, in producing this RIA, we have had regard to such general guidance as we consider appropriate including related Cabinet Office guidance. For further information about our approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on our website: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf.

Background

A5.4 In the UK, we are responsible for the authorising of civil use of the radio spectrum and achieve this by granting wireless telegraphy ("WT") licences under the Wireless Telegraphy Act 2006 (the "WT Act") and by making Regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 8(1) of the WT Act, it is an offence to install or use equipment to transmit without holding a licence granted by us, unless the use of such equipment is exempted. However under Section 8(4) of the WT Act we must make regulations to exempt equipment if it is unlikely to cause undue interference

Proposal

A5.5 This RIA relates to the proposal liberalise the licence exemption criteria for low powered devices. This will be achieved through making a new set of Regulations. The changes proposed fall into the following categories:

- Measures to introduce the new technology of Railway Level Crossing Radar Sensor Systems;
- Measures to liberalise current licence exemption criteria for low power devices:

- High Density Fixed Satellite Services (HDFSS);
- Underwater system use below 30 MHz; and
- A range of SRDs to harmonise, on a voluntary basis, with Europe where such measures are viewed as beneficial.

The citizen and/or consumer interest

A5.6 We take account of the impact of our decisions upon both citizen and consumer interests in the markets we regulate. In proposing changes to the existing Regulations we have considered the wider impact beyond immediate stakeholders in the radiocommunications community and sought the advice of the Ofcom Consumer Panel. We believe that the proposals will be of benefit to consumers for the following reasons:

i) the measures proposed all concern the use of radio equipment on a licence-exempt basis, which reduces the regulatory and administrative burden on our customers;

ii) The measures proposed will help improve safety for citizens when using railway level crossings;

iii) licence-exemption is proposed only in areas where use of equipment is unlikely to cause harmful interference to other spectrum use; and

iv) they support the introduction of new and innovative technologies that will be of benefit to consumers in general.

A5.7 We are required by statute to assess the impact of all our functions, policies, projects and practices on race, disability and gender equality – an Equality Impact Assessment (EIA) is our way of fulfilling these obligations. The findings of our EIA initial screening showed that there is a positive impact on equality in these proposals in relation to citizens with a hearing impairment. We are proposing an administrative change permitting the airborne use of Assistive Listening Devices.

Our policy objective

A5.8 We seek wherever possible, to reduce the regulatory burden upon our stakeholders, in this instance users of the radio spectrum. One way in which we can do this is to remove the need for spectrum users to apply for individual licences to authorise the use of radio equipment. In line with section 8(1) of the WT Act, the use of WT equipment in the UK is authorised either by the issue of an appropriate WT licence or through the specific exemption from the need to hold such a licence. However under section 8(4) of the WT Act we must make Regulations to exempt equipment if it is unlikely to cause undue interference. Exemption is realised by describing the details of equipment and the parameters under which it may be used in a Statutory Instrument (secondary legislation called Regulations) that exempts users of such equipment from the need to hold a WT licence provided they comply with the terms of the Regulations.

A5.9 In accordance with the Communications Act, we aim to exempt from licensing the use of specified equipment where it is not likely that such use will cause interference to other legitimate users of the radio spectrum or is contrary to an international obligation. We are is also required to implement European Union (EU)

legislation relating to radio spectrum and from time to time this requires licence exemption arrangements to be changed.

Options considered

A5.10 The types of licence-exemption measures considered in this consultation fall into two categories:

i) removing regulatory burdens on stakeholders; and

ii) implementation of European Commission (EC) Decisions (typically changes to existing exemption requirements in all but one case) that require allocation of specified spectrum bands to short range devices (SRDs); and

A5.11 With regard to the first category, we have two potential options:

i) not to authorise use or change; or

ii) to authorise use through Licence exemption.

A5.12 The approach we have taken to analysing these options is as follows. The first option of not authorising use of the spectrum or the proposed change versus authorising it. This relates to balancing judgements about the potential future uses of the band and the value of the uses that would be authorised via licence exemption. Such judgements typically require assumptions to be made about potential future uses of each band and the potential markets (and producer and consumer benefits) that may arise from licence-exempt use. Quantitative estimates for the bands in question would involve significant uncertainty and are unlikely to give a robust basis for analysing this option. Instead our approach has been to gather available information on the potential demand from other uses for the spectrum and make qualitative assessments of the relative benefits and costs of not authorising use of the spectrum.

A5.13 Secondly we consider the question of whether to authorise use through exemption. Generally, taking a licence-exempt approach over a licensed approach involves a reduction of the regulatory burden in the use of these bands. Our analysis takes this proposition as starting point and then focuses on whether there might be concerns over whether existing users in the band (if there are any) or potential new users might suffer harmful interference as a result of the decision to licence exempt. In theory this could negate the benefits of reductions in the regulatory burden.

A5.14 We are required to implement EC Decisions by law. Therefore for the second category of measures, we have not assessed their potential impact on the costs for business and for us. We have decided on this course of action as the EC Decisions have yet to be published and we are unable to assess the impacts this may have until we have the final proposals.

Analysis of options

Removing regulatory burdens

A5.15 Table A.1 below presents our analysis of measures which deal with proposals that remove regulatory burdens on spectrum users. The table considers the arguments for authorising versus not authorising the use/change proposed. In considering whether use should be authorised or not, we assess the potential demand for the

spectrum from alternative uses and whether licence-exemption could mean that potentially more valuable uses could be excluded from the spectrum.

Table A.1: Assessment of costs and benefits of authorising vs. not authorising use

Device	Description of exemption	General benefit of authorising	Potential costs
Railway Level Crossing Radar Sensor Systems	Permit the use of Railway Level Crossing Radar Sensor Systems in the band 24.1 to 24.35 GHz. Devices will have a permitted e.i.r.p. of 500mW. Installations will only be allowed at railway level crossings and subject to a 20 km exclusion zone around six Radio Astronomy sites.	Improving the safety of citizens when using railway level crossings. Help to reduce the number of causalities and fatalities.	There are already a number of other Short Range Radar operating at 24 GHz. There is a potential risk to Radio Astronomy sites but the 20 km exclusion zone should mitigate any potential interference.
HDFSS Low-power satellite earth stations	Liberalise licence exemption in bands 29.4625 - 30 GHz for low power stations from 50 dbW to 55 dbW.	Benefits business by promoting the availability of broadband and multimedia services in rural areas. Brings the UK into line with other countries that have adopted ECC/DEC(05)01. Change would enable increase in potential download speeds from 1 to 2Mbit/s up to a rate of 2 to 10Mbit/s or greater, depending on atmospheric conditions.	There is little evidence of current or future demand for the band from alternative uses. In principle, the band could be used for Broadband Wireless Access (BWA) services. However, we have already awarded spectrum in the bands 10, 28, 32 and 40 GHz and indications are that this is likely to be sufficient to meet demand for BWA use in these frequency ranges. Already licence exempt.
Underwater communications under 30 MHz	Proposal to allow a power of 40 dBuA/m for devices operating underwater in 9 – 30000 kHz band.	Benefits to divers and offshore industry from being able to use higher power systems underwater. As they are operating underwater and the limit for in-air emissions are the same the likelihood of interference to existing users should be low.	Potential for in-air interference if devices cannot stop transmissions at the water line. There is currently no harmonised standard to measure devices not operating through the air and these may need to be developed before equipment could successfully be placed on the market.
Industrial/Commercial Telemetry and Tele-Command	Removal of the airborne restriction in the 869.4 - 869.65 MHz band.	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.

Device	Description of exemption	General benefit of authorising	Potential costs
Detection of Movement	Removal of the airborne restriction in the 5.8 GHz band.	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.
Inductive devices	Increase the permitted power for Inductive Devices in the 60.25 to 70 kHz band to 72 dBuA/m from the present 69 dBuA/m limit and in the 70 to 90 kHz band to 72 dBuA/m from the present 48 dBuA/m limit	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.
Non-Specific SRDs	Removal of Voice/Audio restrictions in 434 MHz band	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.
Alarms	Liberalisation of Duty Cycle limit for in the 869.3 to 869.4 MHz band.	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.
Wideband Data Transmission Systems	Implement a single power limit of 40 dBm for indoor and outdoor systems (note outdoor fixed installations not permitted)	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.

Device	Description of exemption	General benefit of authorising	Potential costs
Vehicle Radar	Permit alternative sweep rate conditions in the 24.05 to 24.15 GHz band.	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.
Video apparatus	Removal of the channel bandwidth restriction in the 2.4 GHz and 5.8 GHz bands.	Removal of unnecessary constraints on the channel plan within the allocated band. This proposal brings the UK allocation in line with the European Recommendation for SRD. In addition it does not stop operators from continuing to use their equipment as they were before.	The equipment is already licence exempt and existing users can continue to operate services.

A5.16 In summary, we consider that there is a good case for authorising the use proposed in each case. In particular, no compelling evidence has been found that there is likely to be current or future demand for the spectrum from other more valuable uses.

A5.17 We also consider that implementing the measures listed above is likely to generate a net benefit for UK businesses and consumers and at worst would have a neutral outcome (to the extent that benefits may depend on the uptake of the new opportunities afforded by each proposal). In particular, we consider that each measure is unlikely to impose costs on other users. Therefore if there is any benefit then the overall impact of each measure is likely to be positive.

Costs to business

A5.18 Our assessment of the potential costs to business from each of the proposed licence-exemption measures is detailed in the sections above under analysis of the options. Costs to business could arise insofar as the proposals impact on business use of the spectrum. However, for each of the proposed measures our view is that the potential impact on other users of the spectrum, in terms of the risk of interference or increased congestion, is low. Hence, we consider that each of the measures should impose very little cost on business.

A5.19 Moreover, costs to business are likely to be lower under a licence-exemption approach than the alternative of a licensed approach, since licence-exemption represents the least cost regulatory approach to the authorisation of spectrum use. For example if use of spectrum is authorised through a WT licence, businesses will face administrative costs associated with applying for the licence. Businesses could face additional costs depending on the method of award of the licence. If licences are awarded by means of an auction, businesses will face the costs (including management time) of participating in the auction. If licences are awarded on a first come first served basis, businesses will typically incur the administrative costs of the initial application and annual renewal of licences.

Costs to us

A5.20 There are one-off administrative costs associated with making a Statutory Instrument. We consider the implementation costs to be low, both in absolute terms and in comparison to licensing alternatives that might require an auction or the maintenance of an annually renewable licence scheme if licences are awarded on a first come first served basis. Moreover, the costs such as they are will also be offset by the benefits to business and consumer outlined above. There may also be a slight reduction in spectrum management costs in certain areas through licence exemption.

Annex 6

Glossary of abbreviations

CEPT	European Conference of Postal and Telecommunications Administrations
CGC	Complementary Ground Components
dBm	Decibels relative to milliwats
ECC	Electronic Communications Committee
e.i.r.p.	Effective isotropic radiated power
ETSI	European Technical Standards Institute
EC	European Commission
EU	European Union
FSS	Fixed Satellite Service
GHz	Gigahertz
GSM	Global System for Mobile communications
HD	High Definition
HDFSS	High Density Fixed Satellite Service
IR	Interface Requirement
kHz	Kilohertz
LMSS	Land MSS
MCA	Mobile Communications on Aircraft
MCV	Mobile Communications onboard Vessels
MHz	Megahertz
MoD	Ministry of Defence
MSS	Mobile Satellite Services

mW	Milliwatt
R&TTE	Radio Equipment and Telecommunications Terminal Equipment Directive
RFID	Radio Frequency Identification
RTTT	Road Transport and Traffic Telematics
RSC	Radio Spectrum Committee
SRD	Short range device
TRP	Total Radiate Power
UMTS	Universal Mobile Telecommunications System
VSAT	Very Small Aperture Terminals
WBDTS	Wideband Data Transmission Systems
WT	Wireless telegraphy