



Licence Exempt spectrum use in the 2400 MHz band

Call for input

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Section 1

Licence exempt spectrum usage in the 2400 MHz band

Introduction

- 1.1 This call for input relates to understanding spectrum use by licence exempt (LE) devices in the 2400 MHz band. This band is close to radio spectrum in the 2300 MHz band which the Ministry of Defence (MoD) plans to release for new civil uses.¹ These plans are part of a Government commitment to release 500 MHz of spectrum for new civil uses by 2020. This aims to address the increasing demand for spectrum fuelled by devices such as smartphones and tablets.
- 1.2 LE devices operate without any expectation of protection against interference. Even so we are seeking to understand any technical coexistence issues between future uses of the MoD's planned release spectrum in the 2300 MHz band and LE uses in the nearby 2400 MHz band.
- 1.3 In advance of a full consultation on the technical and regulatory aspects of the MoD's planned release, Ofcom is issuing this call for input to inform our technical work. The document introduces two reports exploring LE use in the 2400 MHz band and asks whether respondents agree with the findings. It also asks if there are *other* uses of the band or additional information not covered in the reports and whether there may be equipment characteristics or usage scenarios making those uses susceptible to interference.

MoD's plans

- 1.4 The MoD plans to release up to 40 MHz of spectrum within the 2300 MHz band for new civil uses, namely the release band 2350 to 2390 MHz. An illustration of the current use of spectrum between 2310 and 2500 MHz is set out below. As noted above, the MoD's plans are part of a Government commitment to release 500 MHz of spectrum for new civil uses by 2020. The Government's rationale for spectrum release is set out in the document '*Enabling UK growth – releasing public spectrum*'² and in the MoD's 2008 consultation which details the benefits this is expected to bring for citizens and consumers.³ The MoD is likely to release this spectrum in 2014.

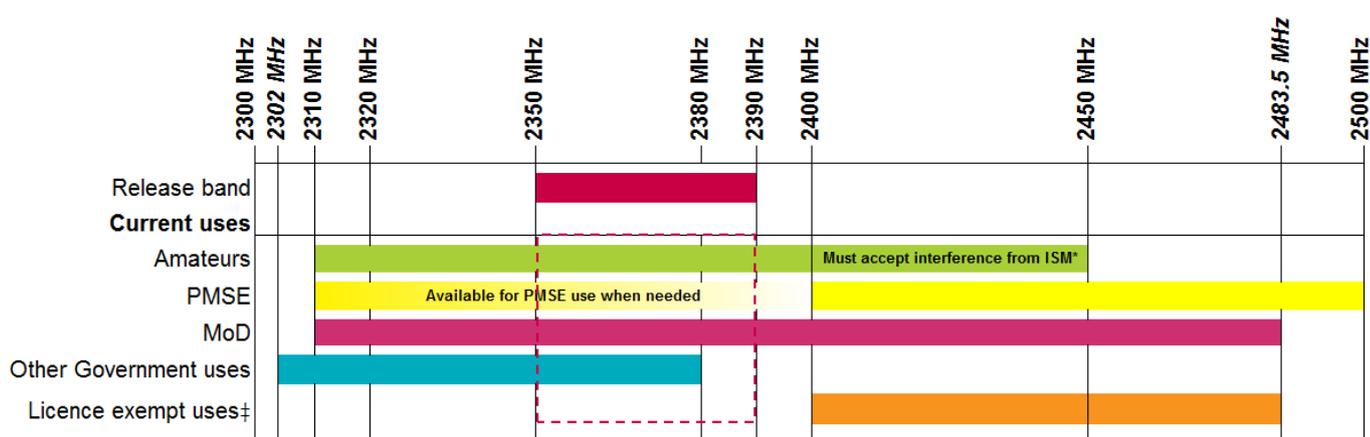
¹ <https://www.gov.uk/government/news/mod-to-auction-off-radio-spectrum>

² www.culture.gov.uk/images/publications/Spectrum_Release.pdf

³

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/35937/dsm_consultation_report.pdf

Figure 1.1 Current use of spectrum from 2310 to 2500 MHz⁴



Source: UK FAT 2013

* 2400 to 2450 MHz may also be used by the amateur satellite service

‡ 2400 to 2500 MHz is designated for Industrial, Scientific and Medical (ISM) applications

- 1.5 Whilst new licences will ultimately be issued on a technology neutral basis, ongoing moves towards pan-European harmonisation of spectrum in the 2300 to 2400 MHz band means it is likely that the released MoD spectrum will be used for 4G Long Term Evolution (LTE) technology or LTE advanced.

Ofcom's role

- 1.6 Ofcom is facilitating this sale through the provision of a grant of Recognised Spectrum Access (RSA) to the MoD. Crown bodies, such as the MoD, currently use spectrum without individual authorisation from Ofcom. RSAs provide formal recognition of rights and obligations to spectrum akin to that conferred by a Wireless Telegraphy Act (WT) licence enabling Crown bodies to trade spectrum. Following a trade of RSA, Ofcom can then convert the RSA into a WT licence.
- 1.7 We are therefore providing technical advice to the project and are responsible for understanding technical coexistence between current civil and new uses created as a result of the MoD's release.⁵ As part of this work we are conducting technical analysis to assess coexistence by uses in the 2400 MHz LE band and new uses in the adjacent release band. Our work in this area is ongoing and the results will form part of a comprehensive consultation prior to any release. In order to ensure we have a complete picture of current uses in the LE 2400 MHz band we are publishing the initial reports and issuing this call for input.

Context for licence exempt use in the 2400 MHz band

- 1.8 Ofcom is responsible for authorising civil use of the radio spectrum and achieves this by granting wireless telegraphy 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 establish, install or use equipment for wireless telegraphy without holding a licence granted by us, unless the use of such equipment is exempted. Ofcom is

⁴ Amending Decision 2006/771/EC, the Radio Spectrum Committee has agreed in principle that in addition to the current uses the band 2483.5 to 2500 MHz will be harmonised from Short Range Devices (SRDs) for medical use.

⁵ The MoD is responsible for understanding technical coexistence with existing military uses.

able to make regulations exempting the use of equipment by using powers conferred by section 8(3) of the WT Act.

- 1.9 Under section 8(4) of the WT Act, we have to make regulations to exempt equipment if its installation or use is not likely to:
- involve undue interference with wireless telegraphy;
 - have an adverse effect on technical quality of service;
 - lead to inefficient use of the part of the electromagnetic spectrum available for wireless telegraphy;
 - endanger safety of life;
 - prejudice the promotion of social, regional or territorial cohesion; or
 - prejudice the promotion of cultural and linguistic diversity and media pluralism.
- 1.10 LE applications have led to significant benefits to citizens and consumers, as well as to UK industry. LE devices operate on a non-interference non-protection basis.⁶ In other words, devices must not cause interference to other uses and can expect no protection from other properly authorised users. This legal status has applied uniformly across Europe for many years and is reflected in European equipment standards.
- 1.11 Despite the non-interference/non-protected nature of LE use, we are keen to understand coexistence between the potential release of 2300 MHz and 2400 MHz band. Because the band is used by licence exempt devices Ofcom does not hold detailed information on what uses are made of the band.
- 1.12 While we understand many of the widespread technologies and applications such as Wi-Fi, Bluetooth and applications such as in-home wireless control, there are many others. Therefore we have commissioned work to audit the LE uses in the 2400 MHz band, in particular to identify possible uses of which we were unaware. This enables us to understand usage and to understand if there are potential coexistence issues.
- 1.13 This purpose of this call for input is to publish the results of this work and invite stakeholders to identify any other classes or individual uses that may need to be considered in order to understand coexistence between the potential release of 2300 MHz and the 2400 MHz band.

About the audit

- 1.14 The first report⁷ outlines the high level categories of each type of application in the band based predominantly on the relevant equipment standards that are applicable in this band. The second report⁸ is a more detailed market study with particular focus on applications which may be susceptible to interference, and/or applications which may be considered by some to be operationally critical. Wide scale applications

⁶ <http://stakeholders.ofcom.org.uk/binaries/consultations/wireless-telegraphy-devices-2/summary/wireless-telegraphy-device-2.pdf>

⁷ [Audit of the LE 2400 MHz band – ISM Band Audit](#)

⁸ [Market Study of the LE 2400 MHz band – ISM LE Band Audit](#)

which we had already identified for further study such as domestic and enterprise Wi-Fi, and Bluetooth were not addressed in this audit.

- 1.15 The market study found a range of applications including home and industrial automation; street lighting control and healthcare and medical applications. Many of these use existing IEEE standards such as Wi-Fi, Bluetooth and ZigBee⁹. We are already conducting work to examine potential coexistence issues with all of these technologies even though LE devices operate without any expectation of protection against interference.

Call for input

- 1.16 We know that there is a broad range of LE users and so we have decided to issue a call for input in order to identify any other classes or individual uses that may need to be considered as part of our technical work prior to the MoD's planned release. Links to the two audit reports are available at Annex 6.

Question 1: Are there uses not covered in the market study with equipment characteristics or uses that are likely to make that use susceptible to interference from LTE?

If so, please answer the following questions for each identified additional LE use in the 2400 MHz band:

1.1 What is the type of application?

1.2 What is the nature of use? (i.e. how is it used? in what environment/s?)

1.3 What is the extent of use (please give an indication of regularity of use and number of units in use in the UK and/or expected future extent of use, if applicable).

1.4 What is the range of use? (i.e. what is the typical distance between the receiver and transmitter?)

1.5 What are the RF characteristics of the transmitter (i.e. power levels, occupied bandwidths) and what are the relevant technical standards that this product complies with?

1.6 What are the RF characteristics of the receiver? (e.g. minimum sensitivity, blocking levels, adjacent channel rejection) and could these be improved if they were found to suffer interference?

Please include details of equipment manufacturer make and model, if applicable.

We are particularly interested in any uses not covered by the second report which have widespread usage and may be perceived as being operationally critical. However where respondents have additional information about already identified uses that they think might be relevant to our studies then we would also be grateful for this information.

Q2. Do you have further information about uses covered in the reports?

If so, please answer the questions 1.1 to 1.6 as appropriate for each identified use.

Q3. Do you have any further comments in relation to the report/s?

⁹ The Institute of Electrical and Electronics Engineers (IEEE) develops industry standard protocols which among other uses are adopted by LE devices.

Next steps

- 1.17 Stakeholders have until Wednesday 19 June 2013 to respond to this call for input. We will consider the responses as part of our ongoing technical work and analysis of the potential release of spectrum in the 2300 MHz band for new civil uses. We aim to issue a full consultation before the end of 2013 on the technical coexistence work and how we plan to proceed with a grant of RSA to the MoD.
- 1.18 Please note that you can register to receive free email 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

Annex 1

Responding to this call for input

How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on Wednesday 19 June 2013**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at <http://stakeholders.ofcom.org.uk/consultations/2400-mhz/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 email pssr@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A1.4 Responses may alternatively be posted to the address below, marked with the title of the consultation.
- Helen Charles
Floor 3
Spectrum Policy Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA
- 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 at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's 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 Helen Charles on 020 7783 3029.

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. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

Ofcom's consultation processes

- A1.11 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.12 If you have any comments or suggestions on how Ofcom conducts its 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.
- A1.13 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it 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 who 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. Ofcom's '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 would 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 those decisions.

Annex 3

Call for input 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 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 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 questions

Call for input into licence exempt use in the 2400 MHz band

- A4.1 Alongside this call for input we have published two reports commissioned by the MoD. After reviewing these reports we would like stakeholders to consider the questions below.

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Q3. Do you have any further comments in relation to the report/s?

Annex 5

Links to relevant documents

1. [Audit of the LE 2400 MHz band - ISM Band Audit](#)
2. [Market Study of the LE 2400 MHz band - ISM LE Band Audit](#)