



Notice of proposals to make
the Wireless Telegraphy
(White Space Devices)
(Exemption) Regulations 2015

Consultation

Publication date: 6 November 2015

Closing Date for Responses: 7 December 2015

About this document

This document is a consultation on draft regulations to enable use of white space devices in the UHF TV band under a licence-exemption regime, which would implement a decision announced in February.

'White spaces' are gaps in the radio spectrum in frequency bands, which can be used to offer new wireless applications to benefit consumers and businesses.

The white spaces covered by the draft regulations are in frequencies currently used for digital terrestrial TV and wireless microphones, among other services, in the 470 - 790 MHz spectrum band. Use of white space devices would be permitted on the basis that the devices meet certain technical conditions.

To avoid harmful interference being caused to existing spectrum users, devices will need to communicate with databases which will apply rules, set by Ofcom, to put limits on the power levels at which devices can operate.

Contents

Section		Page
1	Executive summary	1
2	Background	2
3	General effect of the Proposed Regulations	8
Annex		Page
1	Responding to this consultation	13
2	Ofcom's consultation principles	15
3	Consultation response cover sheet	16
4	Consultation question	18
5	Draft Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015	19

Section 1

Executive summary

- 1.1 This document consults on draft regulations, the Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015 (the 'Proposed Regulations') that would enable the use of certain wireless telegraphy equipment complying with the technical parameters set out in the Proposed Regulations on a licence exempt basis.
- 1.2 Ofcom is responsible for authorising civil use of the radio spectrum. Under section 8(1) of the Wireless Telegraphy Act 2006 (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 able to make regulations exempting the use of equipment by using powers conferred by section 8(3) of the WT Act.
- 1.3 The Proposed Regulations would implement Ofcom's decision, as set out in our statement published on 12 February 2015 entitled "*Implementing TV White Spaces*" (the "TVWS Statement"), to move ahead with the policy proposal to allow white space devices access to unused frequencies in the UHF TV Band under a licence exemption regime, provided that the devices meet certain minimum technical requirements.
- 1.4 In accordance with the requirements of section 122(4) and (5) of the WT Act, this document gives notice of our intention to make the Proposed Regulations.
- 1.5 Comments on the Proposed Regulations are invited by 5pm on 7 December 2015. Subject to consideration of responses we intend to bring the new regulation into force in December 2015.
- 1.6 The Proposed Regulations are included in this document at Annex 5. Further copies may be obtained from www.ofcom.org.uk or from Ofcom at Riverside House, 2a Southwark Bridge Road, London SE1 9HA.

Section 2

Background

Regulatory framework

- 2.1 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.
- 2.2 In particular, Under section 8(1) of the WT Act, it is an offence to establish, install or use wireless telegraphy (“WT”) equipment in the UK except where such use is authorised either by the issue of an appropriate wireless telegraphy licence or where the use of such equipment is exempted from the need to hold such a licence by regulations (i.e. a statutory instrument) made under section 8(3) of the WT Act.
- 2.3 Under section 8(3) of the WT Act, Ofcom may by regulations exempt from the requirement of a licence the establishment, installation or use of equipment of such class as may be specified in the regulations, either absolutely or subject to such terms, provisions and limitations as may be so specified.
- 2.4 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.
- 2.5 In accordance with the requirements of section 8(3B) of the WT Act, the terms, provisions and limitations specified in the regulations must be:
 - objectively justifiable in relation to the wireless telegraphy stations or wireless telegraphy apparatus to which they relate;
 - not such as to discriminate unduly against particular persons or against a particular description of persons;
 - proportionate to what they are intended to achieve; and
 - transparent in relation to what they are intended to achieve.
- 2.6 Before making any regulations we are required by section 122(4) of the WT Act to give notice of our proposal to do so. Under section 122(5), the notice must state that

Ofcom proposes to make the regulations in question, set out their general effect, specify an address from which a copy of the proposed regulations or order may be obtained, and specify a time before which any representations with respect to the proposal must be made to Ofcom. That time must be at least one month beginning with the day after that on which the notice is given or published.

2.7 This document gives notice of our proposal to make the Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015 (the “Proposed Regulations”). It is structured as follows:

- Section 3 presents the policy background to our work on TV White Spaces and explains the rationale for making the Proposed Regulations and the next steps after publication of this document;
- Section 4 sets out the general effect of the Proposed Regulations;
- A draft of the Proposed Regulations is in Annex 5.

Policy Background

What are TV white spaces?

2.8 The UHF TV band is currently allocated for use by Digital Terrestrial Television (DTT) broadcasting and Programme Making and Special Events (PMSE). Currently, Freeview TV channels are broadcast using up to six multiplexes. Each multiplex requires an 8 MHz channel. Multiplexes are transmitted at different frequency channels across the country in the frequency range 470 to 790MHz.

2.9 Whilst a total of 32 channels each 8 MHz wide are reserved for DTT in the UK, only six of these channels are required to receive the 6 multiplexes at any given location. In other words, the vast majority of channels are unused for DTT transmission at any given location. This is required because high-power TV broadcasts using the same frequency need geographic separation between their coverage areas to avoid interference.

2.10 The channels that are not used by DTT at any given location can be used by lower-power devices on an opportunistic basis. This opportunistic access to interleaved spectrum is not new. Programme making and special events (PMSE) equipment such as radio microphones and audio devices have been exploiting the interleaved spectrum for a number of years, and Ofcom issues more than 50,000 assignments annually for this type of use.

2.11 We refer to the spectrum that is left over by DTT (including local TV) and PMSE use as TV White Spaces (TVWS). By this we mean the combination of locations and frequencies in the UHF TV band that can be used by new users which would operate in accordance with technical parameters that ensure that there is a low probability of harmful interference to DTT reception or PMSE usage or services above and below the band.

The development of the UK approach to White Spaces

2.12 As noted above, the Proposed Regulations would implement Ofcom’s decision, as set out in our statement published on 12 February 2015 entitled “Implementing TV White Spaces” (the “TVWS Statement”), to move ahead with the policy proposal to allow white space devices (WSDs) access to unused frequencies in the UHF TV

Band under a licence exemption regime, provided that the devices meet certain minimum technical requirements.

- 2.13 The reasons for, and our assessment of the impact of, those policy decisions, has been discussed in a number of earlier consultations and statements, which are summarised below.
- 2.14 On 13 December 2007 Ofcom issued a statement entitled “Digital Dividend Review: a statement on our approach” , in which we concluded that we should allow access by licence exempt devices to interleaved spectrum in the UHF TV band as long as we were satisfied that it would not cause harmful interference to licensed uses, including DTT and PMSE. This was because we considered that the applications that such devices might enable could potentially bring substantial benefits to citizens and consumers.
- 2.15 We have consulted and made policy statements on this subject on several occasions since 2007:
- A statement in July 2009 (“Digital dividend: cognitive access. Statement on licence-exempting cognitive WSDs using interleaved spectrum”) and a consultation in November 2009 (“Digital Dividend: Geolocation for Cognitive Access. A discussion on using geolocation to enable licence exempt access to the interleaved spectrum”) led us to focus on an approach based on geolocation, under which devices determine their location and query a geolocation database which returns the frequencies they can use at their current location and the power levels they can use.
 - A subsequent consultation published on 9 November 2010 entitled “Implementing Geolocation” (the 2010 Consultation) and the statement “Implementing Geolocation: Summary of consultation responses and next steps” in 2011 then set out our proposed approach to implementing geolocation in the UHF TV band.
 - On 22 November 2012 we published a consultation entitled “TV white spaces: A consultation on white space device requirements” (the 2012 Consultation). That document set out a proposed regime for authorisation of WSDs, and the technical requirements for the devices.
 - On 4 September 2013 we published a further consultation entitled “TV white spaces: approach to coexistence” (the 2013 Consultation). That document set out a proposed approach to how we would calculate where WSDs could operate and with what powers in order to protect existing uses.
- 2.16 In addition, in April 2013 we proposed to explore the implementation of access to TVWS through a pilot. This included developing a set of arrangements for contracting with pilot white space databases, a set of proposals for how the coexistence rules would work and an approach to authorising deployment of devices in various trials. From mid-2014 we authorised a series of trials to test a variety of innovative applications – including sensors that monitor river levels and rural broadband in hard to reach places. This enabled us to test the various elements of the regime.
- 2.17 At the same time we embarked on a substantial programme of coexistence testing to examine whether the propositions in the 2013 Consultation about levels of harmful interference were right. The results of those tests were published on 12 November and 17 December 2014 respectively.

Our decision to allow WSDs on a licence exempt basis

- 2.18 As noted above, on 12 February 2015 we published the TVWS Statement in which we set out our decision to move ahead with the policy proposal to allow WSDs access to the TV Band under a licence exemption regime, provided that the devices meet a minimum technical specification.
- 2.19 In the TVWS Statement, we explain that we believe that this will be of benefit to consumers in particular for the following reasons:
- i) The measures proposed all concern the use of radio equipment on a licence exempt basis, which generally entails the least regulatory and administrative burden on our stakeholders compared to other forms of authorisation, such as individual licences.
 - ii) There may be a wide variety of use cases for White Space technology. Some of the applications for TVWS that have been proposed by industry could potentially lead to mass market consumer use of devices and/or deployments of a very large number of devices (for example for machine to machine applications). The proposed new licence exemptions therefore support the introduction of new and innovative technologies that will be of benefit to consumers and citizens in general and therefore are likely to remove barriers to access to the spectrum, foster innovation and competition in the development of WSDs, and thereby result in benefits to consumers.
 - iii) Licence exemption is proposed only on the basis that use of equipment is unlikely to have an impact on technical quality of service and cause undue interference to other spectrum users, provided that devices:
 - operate under the control of a geolocation database qualified by Ofcom; and
 - comply with a set of technical and operational requirements that we consider are necessary to avoid harmful interference.
- 2.20 The TVWS Statement lays out:
- the high level framework for operation of WSDs and its main features;
 - the technical conditions that devices will have to comply with in order to operate without a licence and
 - the detail of the rules to ensure coexistence of WSDs with existing users of the band, users of neighbouring bands and in neighbouring countries.
- 2.21 The TVWS Statement also explained the next steps towards implementation of our policy decision:
- Ofcom would need to make regulations to authorise WSDs on a licence exempt basis. The TVWS Statement included a draft Statutory Instrument as an indication of what the regulations might look like.
 - We would also have to notify the draft SI and draft Interface Requirement to the European Commission, in accordance with the Technical Standards Directive (98/34/EC).

- We would have to designate White Space Databases that would support WSDs in accordance with our framework. The designated WSDBs would be listed in the licence exemption regulations.

What are we consulting on and why are we consulting now?

2.22 Having completed the relevant steps towards implementation of our policy decision as noted above, we are now ready to make the licence exemption regulations. In particular:

- We submitted drafts of the Proposed Regulations and the Interface Requirements documents to the European Commission under the Technical Standards Directive in June 2015. During the standstill period, the Commission and other Member States can assess whether the proposed measures present a barrier to trade. The standstill period ended on 28 September 2015. No substantive comments or opinions on the Proposed Regulations were made by the Commission or other Member States during the standstill period.
- We have signed contracts with seven organisations that would like to become designated WSDB providers. These organisations are:
 - Council for Scientific and Industrial Research (CSIR),
 - Fairspectrum Oy,
 - Google UK Limited,
 - Microsoft Ireland Operations Limited,
 - Nominet UK,
 - Sony Europe Limited, and
 - Spectrum Bridge Inc.
- We started the Qualification Assessment process for these organisations at the beginning of July 2015. This process involves reviewing information that they have provided to us and testing their WSDB implementations, so that Ofcom can be satisfied that they comply with the relevant technical and operational requirements in the contract.

2.23 We published a draft Statutory Instrument alongside the TVWS Statement, which we subsequently revised to ensure clarity of the provisions prior to notification of the Proposed Regulations to the Commission. In the absence of any comments on the substance of the draft following notification to the Commission we intend to proceed with the making regulations consistent with the draft regulations that we notified and published in June 2015.

2.24 The Isle of Man Authorities have decided that the TVWS framework will apply in the Isle of Man and consequently we will extend these Regulations to cover the Isle of Man as well as the UK.

2.25 As explained in further detail below, the Proposed Regulations require a licence-exempt device to contact a database listed in Schedule 1. We therefore intend to include the names of those databases that Ofcom will designate to provide services

to WSDs in Schedule 1. In the draft of the Proposed Regulations included at Annex 5 of this document, we have indicated the database that has already completed qualification and that we intend to designate; this is Nominet UK. In addition, we are currently working with the six other organisations that we have signed contracts with and that are seeking to be designated. Subject to those databases satisfactorily completing the qualification process within the required period, we also intend to designate these organisations as databases in Schedule 1 of the Proposed Regulations.

- 2.26 We now have completed all the steps identified in the TVWS Statement that need to be done before the licence exemption regulations can be made and are therefore giving notice of our proposals to make the Proposed Regulations in accordance with the requirements of sections 122(4) and 122(5) of the WT Act, as noted in paragraph 2.6 above.

Next steps

- 2.27 Following the publication of this consultation document, stakeholders are invited to provide their feedback on the drafting of the Proposed Regulations. Those who wish to do so have until 5pm on 7 December 2015 to make representations. We expect to release a statement on this consultation in December 2015, having taken responses into account, and to bring the regulations into force at the same time.

Section 3

General effect of the Proposed Regulations

The legislative framework

- 3.1 As previously stated, 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 Ofcom, unless the installation or use of such equipment is exempted. We can exempt the establishment, installation and use of wireless telegraphy equipment by making Regulations under section 8(3) of the WT Act.
- 3.2 We propose to implement our policy decision as set out in the TVWS Statement to authorise the establishment, installation and use of white space devices in the UHF TV band on a licence exempt basis by making the Proposed Regulations.

Extent of application

- 3.3 The Proposed Regulations would apply in the United Kingdom and the Isle of Man. They would not extend to the Channel Islands.

Proposed regulations

- 3.4 A draft of the Proposed Regulations is in Annex 5.
- 3.5 This section explains the general effect of the Proposed Regulations.

Exemption

- 3.6 Regulation 3 sets out the meaning of certain defined terms used in the Proposed Regulations.
- 3.7 Regulation 4 establishes that the use of equipment compliant with the regulations 5 to 10 is exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006.

White Space Devices

- 3.8 Regulation 5 defines “white space devices” (“WSDs”) as equipment that transmits within the frequency band 470 to 790 MHz and provides that WSDs will be categorised as either master or slave devices.
- 3.9 This regulation also defines a master device as a device which is capable of communicating with and obtaining operational parameters from a designated database for the purpose of transmitting within the frequency band 470 MHz to 790 MHz, and a slave device as a device which is capable of transmitting within the frequency band 470 MHz to 790 MHz after receiving slave operational parameters from a master device.

General requirements

3.10 Regulation 6 sets out requirements applicable to all WSDs. These are:

- WSDs must not be used airborne;
- WSDs must not allow the user to input, configure, reconfigure or alter any technical or operational settings or features of the device which would affect the parameters of the device that are communicated to a designated database, or any other technical characteristics of the device that could affect operation of the device in accordance with the rules provided by the database. An example of this would be the antenna gain. If this parameter is set to be smaller than the actual gain of the antenna, then the device could radiate at a higher level than the limit communicated by the WSDB.

Master device requirements

3.11 Regulation 7 sets requirements specific to master devices. A master device:

- must be able to determine its location;
- must provide its device parameters to a designated database, in order to obtain operational parameters from the database. The device parameters include the location and the technical characteristics of the device listed below. The operational parameters indicate to the device the channels and power levels that it can use, together with other constraints. The operational parameters are specified in regulation 11;
- must only transmit in the UHF TV band and operate in accordance with operational parameters provided by a designated database;
- must report back to the designated database the channels and powers that the WSD intends to use – the channel usage parameters – and operate within those channels and powers.

3.12 In addition, where its operational parameters stop being valid, a master device must tell slave devices that are connected to it to stop transmitting and must stop transmitting itself. The operational parameters stop being valid if:

- a designated database tells the master device that the parameters are not valid;
or
- a master device cannot verify, according to the update procedure, that the operational parameters are valid.

3.13 The update procedure requires that a master device contacts, at regular intervals, the designated database from which it has obtained operational parameters, to verify that those parameters are still valid. The frequency of this contact is determined by the “update period”, which is one of the operational parameters, and will initially be set to 15 minutes.

3.14 Regulation 7(2) defines the list of mandatory device parameters. The device may wish to communicate other device parameters that are not in the mandatory list. The mandatory parameters are:

- confirmation that the device is a master device;
- the unique identifier for the device;
- whether the device is Type A or Type B ; and
- the location of the device expressed as longitude and latitude, and the uncertainty in the location.

Slave device requirements

- 3.15 Regulation 8 sets requirements applicable to slave devices only. Slave devices must only transmit according to slave operational parameters received from a master device. These parameters can be of two types as set out in regulation 8(1)(a)(i) and (ii): generic slave operational parameters, which can be used by any slave in the coverage area of the master, and specific slave operational parameters, which can only be used by the slave for which they have been requested, based on that slave's particular device parameters (including the slave device's location and the technical characteristics of the slave device).
- 3.16 Slave devices must also operate according to channel usage parameters. However, in this case these parameters may be determined by the slave device or by the master device on its behalf. If the former, the slave must communicate its channel usage parameters to the master device from which it obtained operational parameters.
- 3.17 A slave device must stop transmitting if its operational parameters are no longer valid. This happens if:
- the master device from which the slave got parameters tells the slave to stop transmitting according to those parameters, or
 - the slave device has not received the transmissions from the master device for longer than five seconds.
- 3.18 There are additional requirements for a slave using generic slave operational parameters: a slave device using generic slave operational parameters must communicate its unique identifier to the master device which has communicated those generic slave operational parameters.
- 3.19 There are also additional requirements for a slave using specific slave operational parameters: a slave device using specific slave operational parameters must communicate the mandatory slave device parameters to the master device from which it is requesting those operational parameters.
- 3.20 The mandatory device parameters for a slave device are also defined in regulation 8(5). They are the same as those listed in 3.14 above – noting that in this case the device must indicate that it is a slave.

Further requirements for a master device that supports generic slave operational parameters

- 3.21 Regulation 9 contains requirements applicable to a master device that provides generic operational parameters for the use of slaves located in its coverage area.

The master device can obtain the generic operational parameters from a designated database only, and it must provide its device parameters to the database to do so.

- 3.22 As noted above, slave devices using generic slave operational parameters must communicate their unique identifier to the serving master. The master is then required to pass this information on to the designated database, together with its own unique identifier. In addition, the master must pass on to the designated database the channel usage parameters of the slave device (which may be determined by the slave device or by the master itself).

Further requirements for a master device that supports specific slave operational parameters

- 3.23 Regulation 10 contains the requirements applicable to a master device that provides specific slave operational parameters (i.e. operational parameters that the database calculates for a particular slave device, based on the precise location and the technical characteristics of the slave device).
- 3.24 A master device that provides specific slave operational parameters to a slave device must have obtained these parameters from a designated database. In order to do so, it must provide the database with the mandatory device parameters of the slave device, together with the master device's unique identifier.
- 3.25 Once this has happened, the master device must provide the slave's channel usage parameters to the database. These parameters may be determined by the master itself, or by the slave device.

Operational parameters and channel usage parameters

- 3.26 Regulations 11 to 13 specify the contents of the master operational parameters, the slave operational parameters, and the channel usage parameters.
- 3.27 Master operational parameters contain the following information:
- i) the DTT channels on which the device may transmit, specified as a list of lower and upper frequency boundaries;
 - ii) the maximum EIRP in each channel, specified as two limits: EIRP in dBm/100 kHz and EIRP in dBm/DTT channel;
 - iii) maximum number of DTT channels and the maximum number of contiguous DTT channels that the device may use at the same time;
 - iv) the period of time when and the geographical location where the parameters are valid. Geographic validity is expressed as a range in metres from the location reported by the device;
 - v) the frequency of the update procedure described in paragraph 3.13; and
 - vi) whether a restriction on simultaneous channel operation applies. The nature of this restriction is specified in Schedule 3.
- 3.28 The operational parameters for a slave device contain the same information as the master operational parameters, with the exception of v) above.

- 3.29 The channel usage parameters contain information about the actual DTT channels and EIRP levels that a device intends to use. As above, channels are specified as a list of lower and upper frequency boundaries, and EIRP levels are specified as two values: one in dBm/100 kHz and another in dBm/DTT channel.

Schedule 1, Schedule 2 and Schedule 3 of the Regulations

- 3.30 Schedule 1 is the list of the organisations that are designated to provide services to white space devices.
- 3.31 Nominet UK have undertaken and successfully completed the Qualification Assessment as required under the contract. This means that they have demonstrated to Ofcom's satisfaction that they comply with the technical requirements for a WSDB that provides services to WSDs as set out in the contract.
- 3.32 The Qualification Assessment for other organisations with whom we have signed contracts as listed in paragraph 2.22 has not been completed yet. We intend to include these organisations as designated databases in Schedule 1 to the Proposed Regulations when they are made, subject to them having satisfactorily completed the Qualification Assessment within the required period.
- 3.33 As noted in the TVWS Statement, we also intend to publish on our website a machine-readable version of that list on a website (<https://tvws-databases.ofcom.org.uk/weblist.xml>) hosted by Ofcom so that it can be selected by a WSD through a process known as "database discovery". We would expect that list to include those database operators which have informed Ofcom that they are ready to start providing services to white space devices.
- 3.34 Schedule 2 is the list of DTT channels that may be used by WSDs, and the upper and lower boundaries of each channel.
- 3.35 Schedule 3 contains the requirement for a power restriction that would be applicable when a device operates simultaneously on multiple DTT channels. This restriction may be activated by Ofcom and communicated to the device by the designated databases as one of the operational parameters.

Question 1) Do you have any comments on the drafting of the Proposed Regulations?

Annex 1

Responding to this consultation

How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 7 December 2015**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at http://stakeholders.ofcom.org.uk/consultations/wireless_telegraphy_white_spaces_devices_exemption_regulations/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 TV.WhiteSpaces@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.
- Reuben Braddock
Spectrum 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 question asked in this document, which is shown 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 Reuben Braddock on 020 7981 3108.

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/terms-of-use/>

Next steps

- A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in December 2015.
- 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/email-updates/>

Ofcom's consultation processes

- A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.14 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.
- A1.15 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

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 <http://stakeholders.ofcom.org.uk/consultations/consultation-response-coversheet/>.
- 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 question

Question 1) Do you have any comments on the drafting of the Proposed Regulations?

Draft Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015

STATUTORY INSTRUMENTS

2015 No. ****

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015

Made - - - - ****

Coming into force - - ****

The Office of Communications (“OFCOM”), in exercise of the powers conferred by sections 8(3) of the Wireless Telegraphy Act 2006 (the “Act”)(1), makes the following Regulations.

Before making these Regulations, OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act and have considered the representations made to them before the time specified in that notice in accordance with section 122(4)(c) of the Act.

Citation, commencement and extent

1. These Regulations may be cited as the Wireless Telegraphy (White Space Devices) (Exemption) Regulations 2015 and shall come into force on **** 2015.

2. These regulations shall not extend to the Channel Islands.

Interpretation

3. In these Regulations—

“channel usage parameters” means the information specified in regulation 13;

“dBm” means decibels of power referenced to one milliWatt;

“dedicated antenna” means a removable antenna which has been designed for use and supplied with a specific type of white space device;

“designated database” means a database which has been listed in Schedule 1;

(1) 2006 c. 36. Section 8(3) was extended to the to the Isle of Man by article 2 of the Wireless Telegraphy (Isle of Man) Order 2007 (S.I. 2007/278); to the Bailiwick of Jersey by article 2 of the Wireless Telegraphy (Jersey) Order 2006 (S.I. 2006/3324); and to the Bailiwick of Guernsey by article 2 of the Wireless Telegraphy (Guernsey) Order 2006 (S.I. 2006/3325).

“device parameters” means the specified master device parameters referred to in regulation 7(2), the specified slave device parameters referred to in regulation 8(5) and the information which must be communicated by a slave device to a master device in accordance with regulation 8(4);

“DTT channel” is an 8 MHz frequency channel listed in Table 1 of Schedule 2;

“EIRP” means equivalent isotropic radiated power, which is the product of the power supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna;

“EIRP spectral density” means EIRP over a specified bandwidth;

“external antenna” means a removable antenna which is not a dedicated antenna;

“geo-location capability” means, in respect of a white space device, the ability of that device to determine the latitude and longitude coordinates of its antenna and the geo-location uncertainty in those latitude and longitude coordinates;

“geo-location uncertainty” means, in respect of a white space device, the uncertainty (in metres) of its reported antenna latitude and longitude co-ordinates;

“integral antenna” means a permanent, fixed antenna forming part of a white space device;

“master operational parameters” means the information specified in regulation 11;

“MHz” means megahertz;

“operational parameters” means master operational parameters or slave operational parameters;

“slave operational parameters” means the information specified in regulation 12;

“Type A equipment” means a white space device which is intended for fixed use only and which has an integral antenna, a dedicated antenna or an external antenna;

“Type B equipment” means a white space device which is not intended for fixed use and which has a dedicated antenna or an integral antenna; and

“unique identifier” means a set of characters comprising—

- (a) the unique serial number of a white space device;
- (b) a white space device’s model number or other identifier of the product family to which the white space device belongs; and
- (c) the unique identifier of the manufacturer of the white space device.

Exemption

4. The establishment, installation and use of wireless telegraphy stations or wireless telegraphy apparatus is hereby exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006 where the terms, provisions and limitations in regulations 5 to 10 are met.

White Space Devices

5.—(1) The wireless telegraphy stations or wireless telegraphy apparatus must be white space devices.

(2) White space devices are wireless telegraphy stations or wireless telegraphy apparatus which—

- (a) transmit within the frequency band 470 to 790 MHz; and
- (b) are master devices or slave devices.

(3) Master devices are wireless telegraphy stations or wireless telegraphy apparatus which are capable of communicating with and obtaining operational parameters from a designated database for the purpose of transmitting within the frequency band 470 MHz to 790 MHz.

(4) Slave devices are wireless telegraphy stations or wireless telegraphy apparatus which are capable of transmitting within the frequency band 470 MHz to 790 MHz after receiving slave operational parameters from a master device.

General requirements for white space devices

6. A white space device must—

- (a) not be used airborne; and
- (b) not allow a user of the white space device to input, configure, reconfigure or alter any technical or operational settings or features of the white space device in a way which would affect the device parameters or any other technical characteristics of the device which are communicated to a designated database, or its operation in accordance with operational parameters.

Master device requirements

- 7.—(1) A master device must—
- (a) have a geo-location capability; and
 - (b) only transmit within the frequency band 470 MHz to 790 MHz—
 - (i) after requesting and receiving master operational parameters from a designated database;
 - (ii) in accordance with the limits specified in the master operational parameters it has received from that designated database; and
 - (iii) on the frequencies and within the power limits specified in the channel usage parameters which the master device has communicated to that designated database.
- (2) When requesting master operational parameters from a designated database, a master device must communicate to that designated database the following information (“specified master device parameters”)—
- (a) information specifying that it is a master device;
 - (b) that master device’s unique identifier;
 - (c) information specifying that the master device is Type A equipment or Type B equipment;
 - (d) the location of the master device expressed as its antenna latitude and longitude coordinates; and
 - (e) the geo-location uncertainty in the master device’s antenna latitude and longitude coordinates.
- (3) After receiving master operational parameters from a designated database, a master device must communicate its channel usage parameters to the designated database.
- (4) A master device must cease transmitting, and instruct all slave devices to which the master device has communicated slave operational parameters to cease transmitting, if the master operational parameters it has received are no longer valid.
- (5) Master operational parameters cease to be valid if—
- (a) a designated database communicates an instruction to the master device that those master operational parameters are not valid; or
 - (b) the master device is unable to verify that those master operational parameters are still valid in accordance with paragraph (6).
- (6) After receiving master operational parameters from a designated database, a master device must communicate with that designated database every update period for confirmation that those master operational parameters remain valid.
- (7) “Update period” means the time period (in seconds) specified by a designated database as part of the master operational parameters referred to in regulation 11(g).

Slave device requirements

- 8.—(1) A slave device must only transmit within the frequency band 470 MHz to 790 MHz—
- (a) after receiving slave operational parameters from a master device which are either—
 - (i) parameters that can be used by all slave devices operating in the coverage area in which communications from the master device can be received (“generic slave operational parameters”); or
 - (ii) parameters that are specific to a particular slave device (“specific slave operational parameters”);

- (b) in accordance with the limits specified in slave operational parameters which have been communicated by a master device; and
 - (c) on the frequencies and within the power limits specified in channel usage parameters that have—
 - (i) been determined by the slave device and communicated to a master device; or
 - (ii) been determined by a master device for the slave device.
- (2) A slave device must cease transmitting if the slave operational parameters it has received are no longer valid.
- (3) Slave operational parameters cease to be valid if —
- (a) the slave device receives an instruction to cease transmissions from the master device from which it has received its slave operational parameters; or
 - (b) the slave device has not received any transmission from the master device from which it has received its slave operational parameters for longer than five seconds.
- (4) A slave device which transmits using generic slave operational parameters must communicate to the master device which has communicated those generic slave operational parameters—
- (a) information specifying that the device is a slave device; and
 - (b) the slave device’s unique identifier.
- (5) If a slave device requests specific slave operational parameters from a master device, it must communicate to the master device when requesting the specific slave operational parameters the following information (“specified slave device parameters”)—
- (a) information specifying that it is a slave device;
 - (b) the slave device’s unique identifier;
 - (c) information specifying that the slave device is Type A equipment or Type B equipment;
 - (d) the location of the slave device expressed as its antenna latitude and longitude coordinates; and
 - (e) the geo-location uncertainty in the slave device’s antenna latitude and longitude coordinates.
- (6) Subject to paragraph (7), after receiving slave operational parameters from a master device, a slave device must communicate its channel usage parameters to that master device.
- (7) A slave device is not required to communicate its channel usage parameters to the master device from which it has received slave operational parameters if those channel usage parameters have been determined by the master device.

Further requirements relating to generic slave operational parameters

- 9.—**(1) A master device which communicates generic slave operational parameters to a slave device must have requested and received those generic slave operational parameters from a designated database.
- (2) When requesting generic slave operational parameters from a designated database, a master device must communicate its specified master device parameters to that designated database.
- (3) A master device must communicate to the designated database from which it has received generic slave operational parameters the unique identifiers which have been communicated to the master device in accordance with regulation 8(4)(b) by slave devices which are transmitting using those generic slave operational parameters, together with the master device’s own unique identifier.
- (4) A master device must communicate to the designated database from which it has received generic slave operational parameters the channel usage parameters of any slave devices that transmit using the generic slave operational parameters, which must be either—
- (a) channel usage parameters determined by the slave device and communicated to the master device in accordance with regulation 8(6); or
 - (b) channel usage parameters determined by the master device for that slave device.

Further requirements relating to specific slave operational parameters

10.—(1) A master device which communicates specific slave operational parameters to a slave device must have requested and received those specific slave operational parameters from a designated database.

(2) When requesting specific slave operational parameters from a designated database, a master device must communicate to that designated database the specified slave device parameters of the slave device which have been communicated to the master device in accordance with regulation 8(5), together with the master device's unique identifier.

(3) After receiving specific slave operational parameters from a designated database, a master device must communicate to that designated database—

- (a) the channel usage parameters of the slave device, which must be either—
 - (i) channel usage parameters determined by the slave device and communicated to the master device in accordance with regulation 8(6); or
 - (ii) channel usage parameters determined by the master device for that slave device; and
- (b) the master device's unique identifier.

Master operational parameters

11. The master operational parameters are—

- (a) the lower and upper boundaries of each of the DTT channels within which a master device may transmit;
- (b) the maximum permitted EIRP spectral density, in dBm over a bandwidth of 0.1 MHz, within each DTT channel within which a master device may transmit;
- (c) the maximum permitted EIRP, in dBm, within each DTT channel within which a master device may transmit;
- (d) limits on the maximum total number of DTT channels that may be used at any given time and the maximum number of contiguous DTT channels that may be used at any given time;
- (e) the time period during which the operational parameters are valid;
- (f) the geographic area within which the operational parameters are valid;
- (g) the time period (in seconds) within which and frequency with which a master device must check with a designated database that the operational parameters it has received from that database are still valid; and
- (h) information indicating if the simultaneous channel operation power restriction applies as specified in Schedule 3.

Slave operational parameters

12. The slave operational parameters are—

- (a) the lower and upper boundaries of the DTT channels within which a slave device may transmit;
- (b) the maximum permitted EIRP spectral density, in dBm over a bandwidth of 0.1 MHz, within each DTT channel within which a slave device may transmit;
- (c) the maximum permitted EIRP, in dBm, within each DTT channel within which a slave device may transmit;
- (d) limits on the maximum total number of DTT channels that may be used at any given time and the maximum number of contiguous DTT channels that may be used at any given time;
- (e) the time period during which the operational parameters are valid;
- (f) the geographic area within which the operational parameters are valid; and
- (g) information indicating if the simultaneous channel operation power restriction applies as specified in Schedule 3.

Channel usage parameters

13. The channel usage parameters are—

- (a) the lower and upper frequency boundaries of each DTT channel within which the white space device will transmit;
- (b) the maximum EIRP spectral density, in dBm over a bandwidth of 0.1 MHz, at which the white space device will transmit in each DTT channel; and
- (c) the maximum EIRP, in dBm, at which the white space device will transmit in each DTT channel.

[•]

[Date] Group Director of Spectrum Policy Group
For and by the authority of the Office of Communications

SCHEDULE 1 LIST OF DESIGNATED DATABASES

The databases offering services to white space devices provided by the organisations listed in this Schedule are designated databases for the purposes of these Regulations:

- Nominet UK
- *[names of any additional organisations which successfully complete the Qualification Assessment within the required period to be inserted – see further explanation in the Notice]*

SCHEDULE 2 DTT CHANNEL RASTER AND CHANNEL NUMBERS

Table 1

Table of European harmonised DTT channel raster and corresponding DTT channel numbers

DTT channel raster (MHz)	470 to 478	478 to 486	486 to 494	766 to 774	774 to 782	782 To 790
DTT channel numbers	21	22	23	58	59	60

SCHEDULE 3 SIMULTANEOUS CHANNEL OPERATION POWER RESTRICTION

The simultaneous channel operation power restriction can take a value of 0 or 1.

A value of 1 indicates that, in case of simultaneous operation in multiple DTT channels, a white space device must restrict its maximum total EIRP to $\{P_{l,i}\}$ dBm, where $P_{l,i}$ is the EIRP provided by the white

space database in the operational parameters for DTT channel i specified by the frequency pair $f_{b,i}$, $f_{w,i}$ and where $f_{b,i}$ is the frequency at the lower edge of the i^{th} channel and $f_{w,i}$ is the frequency at the upper edge of the i^{th} channel.

A value of 0 indicates that this restriction does not apply.

DRAFT