



Spectrum for audio PMSE

Proposed use of the 694 to 703 MHz band

Consultation

Publication date: 20 April 2017

Closing Date for Responses: 29 June 2017

About this document

Following our decision to make the 700 MHz band (694 to 790 MHz) available for use for mobile data services in Q2 2020, we gave notice to Programme Making and Special Events (PMSE) users that they would cease to have access to the 700 MHz band from 1 May 2020.

In this document we set out our proposals to modify that notice so that PMSE users will continue to be able to use the 700 MHz guard band (694 to 703 MHz) beyond 1 May 2020.

We invite stakeholders to comment on our proposals. The closing date for responses is 29 June 2017.

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Section 1

Executive Summary

In this document we consider future use of the 700 MHz guard band

- 1.1 In November 2014, we published our Statement ('the 2014 Statement')¹ setting out our decision to make valuable spectrum between 694 and 790 MHz (the '700 MHz band') available for use for mobile data services. This is a key part of our broader strategy for ensuring that sufficient spectrum is available to meet projected increases in demand for mobile data. To enable this, it is necessary to clear Digital Terrestrial Television (DTT) and Programme Making and Special Events (PMSE) from the band. We refer to our work on this as the '700 MHz clearance programme.'
- 1.2 In October 2016, we published our Statement ('the 2016 Statement')² setting out our decision on two key aspects of the 700 MHz clearance programme:
- To aim to bring forward the release of the 700 MHz band to Q2 2020; and
 - To allocate 20 MHz of the 700 MHz 'centre gap' (from 738 to 758 MHz) to mobile downlink services.
- 1.3 In the 2016 Statement, we also served notice to PMSE users who operate in the 700 MHz band that, from 1 May 2020, they will no longer have access to the spectrum to deliver their services.
- 1.4 In this document, we consider the future use of the guard band from 694 to 703 MHz taking account of the options for use set out in the RSC Decision.³

We propose to make the guard band available for use for audio PMSE services

- 1.5 We propose that there are benefits in allowing audio PMSE users to have continued access to the guard band frequencies and that this is likely to secure the optimal of use of this spectrum.
- 1.6 Allowing PMSE users continued access to the guard band would mean they would be able to continue using their existing equipment that tunes to these frequencies and would not incur the costs of clearing the band. Also, it is our provisional view that use of the guard band by PMSE services would not reduce the benefits that change of use of the 700 MHz band to mobile services would deliver. On that basis, we propose to make the 694 to 703 MHz guard band available for PMSE use.

¹ See Ofcom's 2014 statement 'Decision to make the 700 MHz band available for mobile data' https://www.ofcom.org.uk/_data/assets/pdf_file/0024/46923/700-mhz-statement.pdf

² See Ofcom's 2016 Statement 'Maximising the benefits of 700 MHz clearance' https://www.ofcom.org.uk/_data/assets/pdf_file/0031/92659/Maximising-the-benefits-of-700-MHz-clearance-Statement.pdf

³ The 2016 Statement noted that we would consult on the possibility of using the remainder of the centre gap which has not been allocated to mobile downlink for M2M use (733 to 738 MHz, and specifically 733 to 736 MHz as provided for in the RSC Decision). This consultation only considers the proposed use of the guard band and not the remainder of the centre gap.

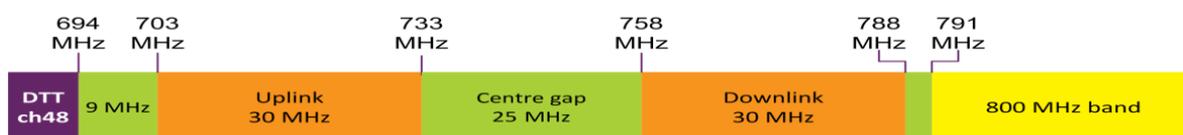
Section 2

Introduction

- 2.1 This consultation considers the future use of the 700 MHz guard band (694 to 703 MHz). It sets out our proposals to make the guard band available for use for audio Programme Making and Special Events services ('audio PMSE services') namely wireless microphones, in-ear monitor systems or audio links.
- 2.2 DTT services, audio PMSE services and White Space Devices ('WSDs')⁴ currently use the spectrum between 470 and 790 MHz. In November 2014, we published a Statement (the '2014 Statement')⁵ setting out our decision to change the way part of this spectrum is used and to make available the frequencies between 694 and 790 MHz for use for mobile data services. We believe this change will deliver significant net benefits, including helping to meet the large growth in demand for mobile data services and ensure that an appropriate amount of mobile spectrum is available to safeguard the benefits that mobile data services deliver to citizens and consumers.
- 2.3 Our 2014 Statement set out the future configuration of the 700 MHz band after it becomes available for mobile data services. It will be divided into the following components: a 9 MHz 'guard band'; 30 MHz of 'uplink', which mobile devices will use to communicate with base stations, and 30 MHz of 'downlink' which base stations will use to communicate with mobile devices; a 3 MHz 'guard band' between the 700 MHz and 800 MHz bands; and a 25 MHz 'centre gap' between the uplink and the downlink bands. Taken together, the uplink and the downlink bands are referred to as the 'paired spectrum'. This configuration is shown in Figure 1 below.

Figure 1. Future configuration of the 700 MHz band

1.1.1 Figure 1: Future configuration of the 700 MHz band



- 2.4 One consideration in our decision to clear the 700 MHz band and make it available for mobile data services was the effect on audio PMSE services currently using it. Safeguarding the ongoing delivery of the benefits those services provide remains an important objective. As part of our attempts to mitigate the effects of the loss of PMSE services' access to the 700 MHz band and to safeguard the benefits they provide, in March 2016 Ofcom set out its decision⁶ to allow audio PMSE users to share access to the 960 to 1164 MHz band with aeronautical radio communication and navigation services.

⁴ WSDs are innovative new devices which can identify and make use of previously unused gaps in frequency bands

⁵ See Ofcom's 2014 statement 'Decision to make the 700 MHz band available for mobile data' https://www.ofcom.org.uk/_data/assets/pdf_file/0024/46923/700-mhz-statement.pdf

⁶ See Ofcom's 2016 Statement, 'New Spectrum for Audio PMSE' https://www.ofcom.org.uk/_data/assets/pdf_file/0021/62481/New-Spectrum-for-Audio-PMSE-statement.pdf

- 2.5 In October 2016, we published a Statement (the '2016 Statement')⁷ setting out decisions relating to three key aspects of the 700 MHz clearance programme:
- We took the spectrum management decision to work towards accelerating the programme by 18 months and release the 700 MHz band for use for mobile data services in Q2 2020.
 - We decided to make 20 MHz of spectrum in part of the 700 MHz band known as the 'centre gap' (see Figure 1) available for use for mobile data services (specifically, mobile downlink).
 - We served notice to PMSE users who operate in the 700 MHz band that, from 1 May 2020, they will no longer have access to the spectrum in this band to deliver their services.

European Commission decisions on the 700 MHz band

- 2.6 The RSC Decision specifies the harmonised technical conditions of use for the 700 MHz band for mobile data and other services (specifically, wireless audio PMSE equipment, PPDR radio communications and M2M communications). The bands 703 to 733 MHz and 758 to 788 MHz are to be made available for use for mobile data services. The Decision includes flexibility for EU Member States on how they could use the remaining frequencies, including the guard band between 694 to 703 MHz, for the other services.
- 2.7 The RSC Decision provides Member States options to make:
- all or part of the guard band (694 to 703 MHz) available for use for PMSE services;
 - part of the guard band (698 to 703 MHz, paired with 753 to 758 MHz in the centre gap) available for use for PPDR radio communications (which covers emergency services communications);
 - part of the centre gap (738 to 758 MHz) available for downlink services;
 - all or part of the centre gap available for use for PMSE services;
 - part of the centre gap (733 to 736 MHz paired with 788 to 791 MHz) available for use for PPDR (which covers emergency services) communications; and
 - part of the centre gap (733 to 736 MHz paired with 788 to 791 MHz) available for M2M communications.
- 2.8 The date by which Member States must make the 700 MHz band available for mobile broadband is set at 30 June 2020 in a Decision from the European Parliament and Council. This is due to be published in the Official Journal of the EU in Q2 of 2017.
- 2.9 In our assessment of options for use of the centre gap we have already considered whether to allocate it to the uses identified in the RSC Decision. In the 2016

⁷ See Ofcom's 2016 Statement 'Maximising the benefits of 700 MHz clearance' https://www.ofcom.org.uk/_data/assets/pdf_file/0031/92659/Maximising-the-benefits-of-700-MHz-clearance-Statement.pdf

Statement, we concluded that allocating it to mobile downlink services (as part of the 700 MHz clearance process) would best secure the optimal use of this spectrum in the UK. In this consultation, we consider the use of the guard band for audio PMSE services on the basis they could continue to use it after the roll-out of mobile services in the adjacent frequencies.

Legal context and analytical framework

Ofcom's specific duties and powers related to spectrum management

- 2.10 Ofcom's responsibilities for spectrum management are set out primarily in two Acts of Parliament which confer on us our specific functions, powers and duties in respect of spectrum (and the other sectors we regulate): The Communications Act 2003 (the '2003 Act') and the Wireless Telegraphy Act 2006 (the 'WT Act').⁸
- 2.11 Amongst our functions and powers in relation to spectrum are the making available of frequencies for use for particular purposes and the granting of rights of use through wireless telegraphy licences and licence exemptions.
- 2.12 Our principal duties under the 2003 Act, when carrying out our functions and exercising our powers, are to further the interests of citizens and consumers, where appropriate by promoting competition. In doing so, we are also required (among other things) to secure the optimal use of spectrum. We must also have regard to (i) the desirability of promoting competition in relevant markets; (ii) the desirability of encouraging investment and innovation in relevant markets; (iii) the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom; and (iv) the different needs and interests, so far as the use of the electro-magnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it.
- 2.13 Additionally, in carrying out our spectrum functions, we have a duty under section 3 of the WT Act to have regard, in particular, to: (i) the extent to which the spectrum is available for use or further use for wireless telegraphy; (ii) the demand for use of that spectrum for wireless telegraphy; and (iii) the demand that is likely to arise in future for the use of that spectrum for wireless telegraphy. We also have a duty to have regard, in particular, to the desirability of promoting: (i) the efficient management and use of the spectrum for wireless telegraphy; (ii) the economic and other benefits that may arise from the use of wireless telegraphy; (iii) the development of innovative services; and (iv) competition in the provision of electronic communications services.
- 2.14 We have reached the proposal set out in this document by reference to these statutory duties. Our provisional view is that it is consistent with these duties. In particular, it reflects demand for spectrum for use for PMSE services. In doing so, they would secure optimal use of the spectrum.

Impact Assessment

- 2.15 Section 7 of the 2003 Act provides that where we are proposing to do anything for the purposes of or in connection with the carrying out of our functions, and it appears

⁸ The European Common Regulatory Framework for electronic communications (in particular, the Framework Directive and the Authorisation Directive) sets out the broad legal framework for how spectrum should be authorised and managed in the UK and aims to harmonise the regulation of electronic communications networks and services throughout the European Union

to us that the proposal is important, we are required to carry out and publish an assessment of the likely impact of implementing the proposal, or a statement setting out our reasons for thinking that it is unnecessary to carry out such an assessment. Where we publish such an assessment, stakeholders must have an opportunity to make representations to us about the proposal to which the assessment relates.

- 2.16 Impact assessments 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. As a matter of policy, Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, “Better policy-making: Ofcom's approach to impact assessment”, on our website.⁹
- 2.17 The analysis presented in this document constitutes an impact assessment as defined in section 7 of the 2003 Act.

Equality Impact Assessment

- 2.18 Ofcom is also required by statute to assess the potential impact of all its functions, policies, projects and practices on the following equality groups: age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation. Equality Impact Assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.
- 2.19 The proposals set out in this document follow the decisions we made in the 2014 and 2016 Statements to clear the 700 MHz band and the notice we gave to PMSE users about the use of that band. In reaching those decisions we conducted an EIA to understand if changes of use of the 700 MHz band could disproportionately affect any particular group of consumers or raise specific issues for groups that are protected under equality laws. In relation to the proposals set out in this consultation, we have not identified any further differential impact of our proposals in relation to the identified equality groups.

⁹ See Ofcom’s publication, ‘Better Policy Making: Ofcom’s approach to Impact Assessment’ https://www.ofcom.org.uk/_data/assets/pdf_file/0026/57194/better_policy_making.pdf

Section 3

Use of the guard band for audio PMSE

- 3.1 In this section, we set out our provisional view that using the band for PMSE services is likely to result in the optimal use of spectrum and maximise benefits to UK citizens and consumers.
- 3.2 There are several reasons why, in our provisional view, we should make the guard band available for use for PMSE services.
- 3.3 As set out in Section 2, our 2016 Statement served notice to PMSE users that access to the 700 MHz band would cease from 1 May 2020. Our view is that the spectrum demand of these users could be met using alternative frequencies, such as in the sub-694 MHz band and in the 960 to 1164 MHz band. However, we propose that there would be some benefit in continuing to make the guard band available to audio PMSE users.
- 3.4 The guard band frequencies would be a continuation of the 470 to 694 MHz band, currently used by PMSE services. PMSE users may therefore be able to continue using existing equipment which tunes to these frequencies and avoid incurring the costs of moving to alternative bands.¹⁰ We also consider that PMSE services will continue to be able to use the guard band even when use of the 700 MHz band for mobile data services rolls out.
- 3.5 There may be some risk of PMSE users operating in the guard band from mobile data services in the adjacent band, i.e. mobile uplink transmissions in the band 703 to 733 MHz. The risk of interference depends on a number of factors including frequency separation between the mobile transmitter and PMSE receiver, but will be greater the nearer PMSE operates to 703 MHz. Our provisional view is that PMSE users would, in most cases, be unlikely to operate immediately adjacent to the 703 MHz boundary, but could apply a suitable frequency separation to ensure the necessary quality of service while maximising the utility of the guard band. The size of the frequency separation would depend on local factors and the PMSE requirement so would be determined on a case by case basis by the PMSE user.
- 3.6 There are also reasons to think that there would continue to be a viable market for PMSE equipment that tunes to the guard band frequencies. In addition to PMSE users in the UK, the RSC Decision may have the effect that some EU Member States also opt to make the guard band available for use for PMSE services. Manufacturers of PMSE equipment would likely respond to this demand by continuing to make equipment that tunes to those frequencies. If they do so, and there is a market for that equipment across the UK and Member States, it is possible they would achieve cross-border economies of scale.
- 3.7 Additionally, it does not appear to us that there are viable alternative uses of the guard band in the UK other than for PMSE services (when considering the options of

¹⁰ Our original cost-benefit analysis for the 700 MHz clearance programme refers to the costs of clearance to the PMSE sector. We note that it does not therefore directly correspond to our current proposal and its benefits to the PMSE sector

use identified in the RSC Decision). On that basis, there would be limited or no opportunity costs in making the band available for use for audio PMSE services.

- 3.8 We further consider that the economic benefits of the 700 MHz clearance programme would remain unchanged as a result of our proposal as making these additional 9 MHz available for PMSE. As detailed in ECC Report 221¹¹ there is no adjacent channel compatibility issue between PMSE as the interferer and the mobile base station receiver (although as noted above there is a risk of interference from mobile services into PMSE), therefore PMSE operation adjacent to 703 MHz would present a low risk of harmful interference into mobile services. Furthermore, compared to the original clearance scenario (i.e. where PMSE would cease to have access to the whole 700 MHz band), PMSE economic costs would not increase and could marginally decrease as some users will be able to continue using their existing equipment over a wider band than what was originally envisaged.
- 3.9 We therefore propose to make the guard band available for use for PMSE services on the basis that this would generate benefits for PMSE users and equipment manufacturers while preserving the benefits of the 700 MHz clearance programme. It would safeguard ongoing benefits that PMSE services provide to UK citizens and consumers and secure optimal use of the spectrum.

Question 1: Do you have any comments on our proposal to allow audio PMSE services to operate in the guard band from 694 to 703 MHz, and that this would be a benefit to PMSE users?

¹¹ Adjacent band compatibility between MFCN and PMSE audio applications in the 700 MHz frequency band – see <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP221.PDF>

Section 4

Provisional Conclusion and Next Steps

- 4.1 In this document, we have set out the proposal to make available the 694 to 703 MHz guard band for use for PMSE services.
- 4.2 Our provisional view is that the use for which we propose to make these frequencies available, together with the decisions we have already made about the use of the 700 MHz band, would secure optimal use of the spectrum.
- 4.3 Our consultation closes on 29 June 2017. Following consideration of responses, we intend to publish a statement in Q3 2017 setting out our decision on the proposals.

Annex 1

Responding to this consultation

How to respond

- A1.1 Ofcom would like to receive views and comments on the issues raised in this document, **by 5pm on 29 June 2017**.
- A1.2 We strongly prefer to receive responses via the online form at <https://www.ofcom.org.uk/consultations-and-statements/category-1/700-mhz-guard-band-pmse>. We also provide a cover sheet (<https://www.ofcom.org.uk/consultations-and-statements/consultation-response-coversheet>) for responses sent by email or post; please fill this in, as it helps us to maintain your confidentiality, and speeds up our work. You do not need to do this if you respond using the online form.
- A1.3 If your response is a large file, or has supporting charts, tables or other data, please email it to uhfsi@ofcom.org.uk as an attachment in Microsoft Word format, together with the cover sheet (<https://www.ofcom.org.uk/consultations-and-statements/consultation-response-coversheet>). This email address is for this consultation only, and will not be valid after 29 June 2017.
- A1.4 Responses may alternatively be posted to the address below, marked with the title of the consultation.
- Spectrum Group
Ofcom
Riverside House
2A Southwark Bridge Road
London SE1 9HA
- A1.5 If you would like to submit your response in an alternative format (e.g. a video or audio file), please contact Alberto Fernandes on 020 7783 4418 or by an email to alberto.fernandes@ofcom.org.uk.
- A1.6 We do not need a paper copy of your response as well as an electronic version. We will acknowledge receipt if your response is submitted via the online web form, but not otherwise.
- A1.7 You do not have to answer all the questions in the consultation if you do not have a view; a short response on just one point is fine. We also welcome joint responses.
- A1.8 It would be helpful if your response could include direct answers to the questions asked in the consultation document. The questions are listed at Annex 3. It would also help if you could explain why you hold your views, and what you think the effect of Ofcom's proposals would be.
- A1.9 If you want to discuss the issues and questions raised in this consultation, please contact Alberto Fernandes on 020 7783 4418 or by email to alberto.fernandes@ofcom.org.uk.

Confidentiality

- A1.10 Consultations are more effective if we publish the responses before the consultation period closes. In particular, this can help people and organisations with limited resources or familiarity with the issues to respond in a more informed way. So, in the interests of transparency and good regulatory practice, and because we believe it is important that everyone who is interested in an issue can see other respondents' views, we usually publish all responses on our website, www.ofcom.org.uk, as soon as we receive them.
- A1.11 If you think your response should be kept confidential, please specify which part(s) this applies to, and explain why. Please send any confidential sections as a separate annex. If you want your name, address, other contact details or job title to remain confidential, please provide them only in the cover sheet, so that we don't have to edit your response.
- A1.12 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.13 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's intellectual property rights are explained further at <https://www.ofcom.org.uk/about-ofcom/website/terms-of-use>.

Next steps

- A1.14 Following this consultation period, Ofcom plans to publish a statement in Q3 2017.
- A1.15 If you wish, you can register to receive mail updates alerting you to new Ofcom publications; for more details, please see <https://www.ofcom.org.uk/about-ofcom/latest/email-updates>

Ofcom's consultation processes

- A1.16 Ofcom aims to make responding to a consultation as easy as possible. For more information, please see our consultation principles in Annex 2.
- A1.17 If you have any comments or suggestions on how we manage our consultations, please email us at consult@ofcom.org.uk. We particularly welcome ideas on how Ofcom could more effectively seek the views of groups or individuals, such as small businesses and residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.18 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact Steve Gettings, Ofcom's consultation champion:

Steve Gettings
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Email: corporationsecretary@ofcom.org.uk

Annex 2

Ofcom's consultation principles

Ofcom has seven principles that it follows for every public written consultation:

Before the consultation

- A2.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. 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

- A2.2 We will be clear about whom we are consulting, why, on what questions and for how long.
- A2.3 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 for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.
- A2.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.
- A2.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.
- A2.6 If we are not able to follow any of these seven principles, we will explain why.

After the consultation

- A2.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.

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 3

Consultation question

A3.1 This annex provides a complete list of the questions we are asking in the sections of this document.

Question 1: Do you have any comments on our proposal to allow audio PMSE services to operate in the guard band from 694 to 703 MHz, and that this would be a benefit to PMSE users?