Programme Making and Special Events

High power PMSE applications in the lower two megahertz of Channel 38 (606-614 MHz)

Statement

Publication date: 8 February 2013

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Section 1

Executive summary

1.1 Having considered the responses to our consultation published on 18 December 2012[1] we have concluded that we will allow access to two 200 kHz channels at 606.7 and 607 MHz at a maximum ERP of 10 W for wireless applications generally used for Programme Making and Special Events (PMSE). We refer to these applications as high power PMSE.

1.2 Access to 606.7 and 607 MHz for high power PMSE will be effective immediately.

1.3 High power PMSE is considered to be audio PMSE applications with a radiated power greater than 50 mW, typically used for audio links and high power wireless microphones operating between 1 W and 10 W ERP.

1.4 The use of this equipment was previously authorised in channel 69 (854-862 MHz) of the 800 MHz band alongside lower power PMSE applications. This band has been cleared in order to make spectrum available for new broadband services. Channel 38 (606-614 MHz) was identified as a replacement channel for PMSE but initial analysis indicated that the use of high power PMSE applications in channel 38 would pose an unacceptable risk of interference to the Radio Astronomy Service (RAS) in neighbouring countries. Consequently, we decided not to allow high power PMSE use in channel 38. However, our recent analysis of the frequency options for high power PMSE use included a review of the basis for this decision. On re-examining the issues, we concluded that the use of high power PMSE in channel 38 will not pose a risk of harmful interference to the RAS in neighbouring countries provided its use is restricted to the 606-608 MHz range (i.e. outside the RAS band at 608-614 MHz).

1.5 Having considered the way that PMSE applications use a combination of interleaved spectrum and channel 38 (and, before this, channel 69) we have concluded that the most appropriate approach is to permit high power PMSE applications in the two 200 kHz channels at 606.7 and 607 MHz

[1] http://stakeholders.ofcom.org.uk/consultations/pmse-channel-38/

Section 2

Introduction

2.1 On 18 December 2012 we published a consultation detailing proposals to allow high power PMSE applications on two 200 kHz channels on 606.7 and 607 MHz at a maximum ERP of 10 Watts.

2.2 This statement describes the responses to that consultation and sets out our decision to allow high power PMSE use as outlined above.

High Power PMSE

2.3 High power PMSE is considered to be audio PMSE applications with a radiated power greater than 50 mW, typically used for audio links and high power wireless microphones operating between 1 W and 10 W ERP. These links are employed in various scenarios such as studio to (broadcast) transmitter links (STLs) for short term broadcasts such as Restricted Service Licences (RSL) and high power microphones at sporting and other major events such as the Open Golf Championship

2.4 High power PMSE was able to use channel 69, (854-862 MHz), on a UK wide basis on channels interleaved between 14 low power PMSE (wireless microphones) channels. As part of our clearance of the 800 MHz band (790-862 MHz, TV channels 61-69) to make the spectrum available for new mobile broadband services, access to channel 69 for PMSE ceased on 31 December 2012.

2.5 Channel 38 (606-614 MHz) was identified and allocated to PMSE as a replacement channel for channel 69. Analysis at the time indicated that there was an unacceptable risk of interference from high power PMSE into the Radio Astronomy Service in neighbouring countries and it was decided that only low power PMSE would be allowed to operate in channel 38.

2.6 The UK has an obligation to protect the RAS in neighbouring countries in accordance with the protection criteria detailed in Recommendation ITU-R RA.769 and it was against these criteria that our decision to not allow high power PMSE in channel 38 was made.

2.7 In our consultation we highlighted that the previous analysis considered the impact of high power PMSE operating within the RAS allocation in channel 38 (608-614 MHz) only. It did not assess the impact of high power PMSE outside the RAS allocation but within channel 38 ie in the band 606-608 MHz. The analysis in Annex 5 of our consultation looked at the option of high power PMSE in the band 606-608 MHz and shows that there is no risk of harmful interference to the RAS.

Consultation

2.8 In our consultation we:

- Outlined our rationale for considering channel 38 as an option for high power PMSE use.
- Presented our analysis of interference in to the RAS from high power PMSE operating in the lower two megahertz of channel 38.

- Noted that we had considered the potential risk of interference in to low power PMSE.

- Proposed that high power PMSE can be authorised to operate on 606.7 and 607 MHz at a maximum of 10 W ERP.

- Stated that for the small number of high power PMSE users who are eligible for funding under the Channel 69 Funding Scheme we would allow access to channel 69 beyond the deadline of 31 December 2012 up to our 800 MHz and 2.6 GHz award..

Stakeholder responses to the consultation

2.9 We received 10 responses to our consultation. The majority of respondents broadly supported our proposal. We have provided a summary of points made in response to our consultation in Section 3 along with our response to those comments.

Structure of document

2.10 The remainder of this document is structured as follows:

- Section 3 – summary of responses and Ofcom's decision.

- Annex 1 – List of respondents.

Section 3

Summary of responses and decision

Overview

3.1 We received 10 responses from interested parties. Three respondents requested that their name, company association and/or email address was kept confidential but that we could use summaries of their responses in the statement. The full text of responses is available on our website.

3.2 Our consultation posed the question:

> *"Do you agree with our proposal to allow high power PMSE use on 606.7 MHz and 607 MHz at a maximum of 10 W ERP?"*

3.3 Two respondents did not agree with our proposal, one respondent neither agreed nor disagreed with our proposal but confirmed the analysis that high power PMSE operating below 608 MHz would not cause harmful interference to the RAS and the remaining seven respondents broadly agreed with our proposal.

3.4 The two respondents who objected to our proposal, MLEC (UK) Ltd and one confidential response, did so on the grounds of the risk of interference to low power PMSE. While the BBC and the British Entertainment Industry Radio Group (BEIRG) supported our proposal they also highlighted the risk of interference to low power PMSE.

3.5 The Committee on Radio Astronomy Frequencies (CRAF) did not specifically respond to our proposal but did confirm our analysis that the proposal does not cause harmful interference to the RAS.

Responses

3.6 The following provides a summary of the responses to the question posed by our consultation and a number of additional but related comments.

3.7 MLEC (UK) Ltd disagreed with our proposal to allow high power PMSE use in channel 38. It stated that as most theatres are using the maximum number of intermodulation free channels within channel 38 there is no scope for these users to move to another channel if interference is received from high power use. MLEC (UK) Ltd also indicated that there are a lack of components [for high power PMSE], e.g. dielectric filters used in receiver front ends and RF power transistors, available in the 600 MHz range and therefore equipment performance will be outside manufacturers' specifications. It suggests that this would limit manufactures' choice of amplifier device and will make units more expensive and difficult to design. It suggests that an alternative would be to allow high power equipment to use channels 21 and 22 as there are generally more RF devices available.

3.8 MLEC (UK) Ltd also suggests that high power PMSE use in channel 38 would be more prone to illegal use than dedicated equipment at other frequencies.

3.9 A second respondent also disagreed with our proposal citing the risk of interference to low power PMSE and suggested that a 10 W transmission in close proximity to a low power PMSE receiver would desensitise the receiver and the front end filtering of

these receivers will be insufficient to cope even when moving to another channel. This respondent questioned whether any testing between high and low power PMSE had been carried out.

3.10 The BBC broadly agreed with our proposal and also noted the risk of increased interference to low power PMSE. It suggests that the same approach in channel 69 could be adopted in channel 38, namely to interleave high power frequencies with low power spot frequencies. The BBC also notes the informal band arrangement adopted by broadcasters for their low power wireless microphone use and requested that the two high power allocations are set to avoid those frequencies.

3.11 The BBC stressed that their suggestions do not seek to undermine the status of channel 38 as a flexible band for wireless microphone users but to minimise the risk of interference to existing use.

3.12 BEIRG agreed with our proposal but questioned the need as high power PMSE can use interleaved spectrum. It also noted the risk of interference to low power PMSE in channel 38 and suggested that this resource is protected for low power use. It also noted that there could be an impact on channel 37.

3.13 BEIRG highlighted that there could be difficulties accommodating all requirements at busy events. BEIRG noted that the two frequencies proposed would not be able to satisfy the high power requirement at an event such as the Open Golf Championship and currently that requirement is met through utilising interleaved spectrum.

3.14 BEIRG suggested a phased introduction of a limited number of high power users in order to determine the potential for interference on low power use. It further suggested that use of channel 38 should be a last resort once options in interleaved spectrum are exhausted. If problems are experienced BEIRG has requested that access to channel 38 for high power PMSE is withdrawn.

3.15 Mr Neil Clark broadly agreed with our proposal but expressed concerns that there is no equipment currently available in the band.

3.16 Lawrence Galkoff Associates Ltd agreed with our proposal and highlighted the value of high power PMSE in covering news and events. Similar to BEIRG the response identified the issue regarding spectrum demand at major events and noted that under such circumstances many low power users often apply for a co-ordinated licence.

3.17 Station Z Media Production Services agreed with our proposal and stated that access to channel 38 for high power PMSE is very important to their organisation.

3.18 Transplan UK agreed with our proposal. It further commented on the release of channel 69 but that has been addressed in previous consultations by Ofcom and will not be addressed in this statement.

3.19 A confidential respondent also agreed with our proposal and noted that having access to these two channels would allow them to provide a full package of communications to a potential radio outside broadcast client.

3.20 CRAF did not comment directly on our proposal but confirmed our analysis that high power use on 606.7 and 607 MHz at a maximum ERP of 10 W would not cause harmful interference in to the RAS.

Interference into low power PMSE

Ofcom's response

3.21 In our consultation we outlined that in identifying channel 38 as the replacement for channel 69 the decision not to allow high power PMSE was based on the analysis that showed there was a high risk of harmful interference to the RAS in neighbouring countries.

3.22 Channel 69 had been configured to provide a number of high powered PMSE channels interleaved between 14 discrete 200 kHz channels for low power PMSE. This arrangement allowed both high and low power PMSE UK wide access to a shared spectrum resource which, in general, operated without issue. As high power and low power PMSE coexisted in channel 69 for a number of years we did not consider it necessary to conduct any coexistence studies for channel 38.

3.23 We note that most high power PMSE equipment is configured to provide a number of discrete channels across a tuning range. One example provides 16 channels over a tuning range of 24 MHz, only two of which would be in channel 38. In those instances where equipment is configured to operate on a number of channels it is our intention that, where possible, assignments will be made outside of channel 38.

3.24 While the proposal is to allow a maximum ERP of 10 W it is typical that most high power PMSE operates at 1 W ERP. JFMG are obligated to manage the spectrum efficiently and as such uses its technical expertise to ensure that users operate at a reasonable power to provide the relevant service without unnecessarily sterilising the spectrum.

3.25 Specifically in response to the BBC's comment regarding allocating spot frequencies in channel 38 in a similar arrangement to channel 69 we do not see any reason to do this to accommodate the two high power channels proposed in our consultation. Further, we are aware of the informal channel arrangement agreed between broadcasters and have selected the two high power frequencies in order to minimise any impact on that plan.

3.26 In response to BEIRG's suggestion that a phased introduction is applied we feel that, due to the low incidence of use and the relatively small number of users, that this would not be worthwhile. We will, however, review the decision to allow high power PMSE in to channel 38 in the event that substantial, harmful interference is experienced by low power PMSE.

3.27 We noted in our consultation that there were only 218 high power assignments in channel 69 in 2011. We believe that with this low incidence of use alongside our intention to avoid channel 38 wherever practicable the probability of harmful interference into low power PMSE is small. We also reiterate that the decision to not allow high power PMSE in channel 38 was to protect the RAS service in neighbouring countries and not to provide an exclusive allocation for low power PMSE.

Other issues raised

Ofcom's response

3.28 MLEC (UK) Ltd and Mr Clark commented on the lack of available equipment that can operate on channel 38. Our studies have shown that there are a number of manufacturers and suppliers that can provide equipment for STLs, audio links and

high power microphones that will operate over a tuning range that includes channel 38. All equipment we have identified provides a number of discrete channels over the particular tuning range.

3.29 MLEC (UK) Ltd suggested that high power PMSE should be allowed to use channels 21 and 22 and BEIRG questioned the need to allow high power use in channel 38 as such use could be accommodated in the interleaved spectrum. High power PMSE is already authorised to access the whole of the interleaved spectrum and the 600 MHz band (550-606 MHz).

3.30 As mentioned above most equipment operates over a tuning range between 20-24 MHz. Identifying channel 21 and 22, or some other part of the interleaved spectrum, as the replacement spectrum for channel 69 will not allow high power users UK wide access to spectrum as they will be constrained by the requirement to protect DTT in areas that broadcast across the particular tuning range of the PMSE equipment.

3.31 We did explore the option of identifying a tuning range in the interleaved spectrum that would provide a UK wide solution but due to the configuration of the broadcast network this was not possible. We also explored other existing options (eg Band 1, 199.7 MHz, 442 MHz, 469 MHz and 1.5 GHz) but all were limited to some degree when compared with the utility of channel 69. By allowing access to channel 38 high power users have an alternative to channel 69 that provides UK wide access to two 200 kHz channels with favourable propagation conditions and readily available equipment. However, users may decide that for their particular circumstance one of the other options outlined above (and available for use) may prove more favourable.

3.32 BEIRG highlighted the potential issue accommodating all requirements at busy events. Lawrence Galkoff Associates Ltd also noted the same issue and indicated that in such cases users often applied for coordinated licences due to the risk of interference in the shared band. Analysis of our licensing database shows that at the Open Championship in 2011 and 2012 only a single high power assignment was made each year in channel 69 (ie in the shared band).

3.33 Based on the above assignment history we think that users recognise the inherent risk of using shared spectrum at a busy event and therefore will opt for coordinated spectrum in order to ensure interference free operation. Further, we have considered the broadcasters' informal spectrum plan for major news events and have selected the two high power frequencies in order to minimise any impact to that plan.

3.34 MLEC (UK) Ltd also stated that high power PMSE use in channel 38 would be more prone to illegal use than dedicated equipment at other frequencies. We see no reason why this would be the case.

Decision

3.35 In considering the responses to our consultation and the compatibility analysis with the RAS we have decided to allow high power PMSE in channel 38 on 606.7 and 607 MHz with a maximum ERP of 10 W.

Annex 1

List of respondents

Non-confidential responses

BBC.

BEIRG.

CRAF.

Lawrence Galkoff Associates Ltd.

MLEC (UK) Ltd.

Mr N Clark.

Station Z Media Production Services.

Transplan UK.