



Commercial Radio Companies Association
1973-2003 Celebrating 30 years of UK Commercial Radio

450-470 MHz Band Alignment

**A Response by CRCA
to the
Radiocommunications Agency Consultation Document**

24 March 2003



Introduction

CRCA is the trade body for commercial radio in the UK. Its members include both the national commercial radio broadcasters and almost all local commercial radio broadcasters, in total 220 member companies. We are pleased to respond to the Radiocommunications Agency Consultation Paper on the 450-470 MHz Band Alignment published in January 2003 on behalf of our members, around half of which are licensed users of UHF spectrum.

CRCA members make extensive use of the limited number of channels available within the UHF band from 440 to 470 MHz for **Programme Making and Special Events 'PMSE'**. This is a wider frequency range than the consultation title suggests, but the re-alignment has implications for the whole of this band. The performance features of the band in terms of propagation and bandwidth are extremely well matched to the intensive and specialist use that is made of it by CRCA members throughout the UK.

Key Points

- CRCA members' use of the band for PMSE is licensed and managed by JFMG. We are aware that JFMG has made a submission to the Consultation focussing on technical and operational matters. We support the JFMG submission and have amplified some key points in this document.
- The re-alignment project has substantial cost implications. We are concerned that an unacceptable proportion of the cost of the implementation will fall on our individual members whilst the process will not offer them individually, any benefit in return. We are therefore seeking to establish a financial mechanism that will completely or substantially offset CRCA members' costs where no benefits arise. This would be in-line with the Agency's overall aim to maximise the benefits and minimise the costs of the band alignment.
- The spectrum and associated equipment and installations permit high performance radio links with considerable flexibility in use. It is essential that neither the performance nor the flexibility is constrained in any significant way by the re-alignment project.
- The consultation suggests there are readily available low-cost technologies that can be deployed following the re-alignment. Whilst this may be true for other users, CRCA sees no evidence that such equipment will be available for PMSE quality audio channels.
- CRCA would wish to see safeguards for its members' interests for a period following the re-alignment.

Background

1. The primary use of PMSE in the band 440 to 470 MHz by CRCA members is 'base receive' for the provision of medium to high quality audio channels, for the broadcast of live and near live location-sound from sporting, news, mobile and airborne locations. The essential characteristics of the channels are:
 - wide audio bandwidth (30 Hz up to 10 kHz or 15 kHz),
 - high signal to noise ratio (around 40dB)
 - low distortion (better than 0.5%)
 - extremely low delay/latency
- Equally significant is the ability of such channels to produce such performance on a consistent and reliable basis, often at short notice.
- The high audio quality is achieved by the use of 50kHz RF channels.
- The analogue modulation of the channels is very transparent, reducing quality degradation that would otherwise arise when, as is commonplace, broadcast audio is passed sequentially through several (often different) digital paths.
- PMSE allocations for quality audio channels are not essentially paired with a reverse (base transmit) channel. This type of duplex operation does arise as does use of well-spaced channels for 'tandem' links. The exact spacing of channels benefits from some flexibility in their frequency allocation.
2. The allocation of the current channels is very effectively and efficiently managed by JFMG to make best use of the available spectrum whilst maintaining the consistent high performance required by licensees.
3. The hardware technology to establish such links is produced by a handful of specialist manufacturers to match and exploit the particular characteristics of the limited spectrum available for PMSE quality audio channels in the 440-470 MHz band. This is a niche market. The current pool of analogue equipment and RF installations has been established over many years.
4. Quality audio links are essential to enable many CRCA members to fulfil the local content obligations that are included in their broadcast licences.
5. There is currently insufficient spectrum to meet all of the needs of all of our members. Therefore any increase in spectrum available for PMSE, whether arising out of the band alignment project or otherwise will be welcomed by the sector as a whole. However we note the concerns of JFMG (response to 1.4.6) that some of the necessary changes will in effect reduce the net gain of spectrum from the re-alignment.

Comments on the Consultation

6. We are advised by JFMG as the frequency managers, that all CRCA members can expect all of their current allocations to be changed as a result of the band alignment. In effect this means that every piece of equipment will have to be 'at best' re-tuned and 'at worst' replaced.
7. Many of the potential benefits for users that are identified in the Consultation Document, will not arise for CRCA members' PMSE use of the band. We consider that those who will benefit from the re-alignment of the band should offset our member's costs in some way. This might be by some levy on other users who will directly benefit from the changes.
8. In contrast to the comments in the Consultation, CRCA members are not aware of any readily available low-cost technology or equipment appropriate to replace analogue PMSE quality audio channels. There is no evidence from users or manufacturers that any digital replacement technology is readily available with practicable and realistic spectrum requirements. In essence, the current analogue modulation scheme is highly spectrum efficient for the purpose.
9. It is also envisaged that no digital replacement would be able to achieve the transparency of audio quality and very low delay and latency that comprise the core benefits of the current analogue modulation scheme, channels and equipment. One digital system that has been identified has four major shortcomings:
 - Occupancy – requiring 250kHz channel spacing
 - Delay – unacceptable for 'live' sound broadcast
 - Audio Quality – lack of transparency of MPEG L2
 - Cost – high Equipment cost and high spectrum occupancy
10. The majority of base stations are 'receive' sites for quality audio links. The essential requirements for wide audio bandwidth with high signal to noise ratios makes them abnormally sensitive to interference. The engineering at PMSE base stations, whether self provided or using shared facilities, has been fine-tuned over considerable periods to minimise interference to quality audio links. A substantial level of re-engineering of base stations will be required as a result of the re-alignment. This effort will be required just to achieve the current level of performance. This re-engineering will incur equipment, third part and our members' man-power costs with little or no benefit.
11. The vast majority of interference to PMSE quality audio channels is from other UK users. There have been very few reports of continental interference.

Summary

12. CRCA has come to this issue rather late. The association represents over 220 member stations and now needs to do a significant amount of research work to provide useful data regarding the quantities of new equipment required, the extent of re-engineering necessary and in turn the cost to our members. We therefore intend to submit further information to the Radio Communications Agency approximately a month after the deadline. We hope this is acceptable and ask that you should tell us whether it is by return.
13. An initial 'dipstick' survey of a handful of members indicates that the re-alignment will require extensive re-equipping. One station estimates over £25k of capital expenditure will be incurred for replacement and upgrading of transmitters and receivers.
14. We believe that few of the benefits identified in the consultation will actually accrue to our members and that considerable costs will be incurred simply to achieve a status quo in terms of the current functionality of PMSE for quality audio links.

Conclusion

15. In conclusion, CRCA considers that substantial cost and little or no benefit will arise for its members from the band re-alignment. However we recognise that there are strategic reasons driving the project and that other users of the band may benefit. Therefore if the project must proceed, CRCA would wish to see the following:
 - A means of offsetting the costs to our members where no benefit flows from the re-alignment
 - An undertaking that following re-alignment, the resulting PMSE channels and the current analogue 50kHz channel technology will continue to be licensable, broadly as at present, for a minimum of 15 years and thereafter until some appropriate and cost-effective alternative is available
 - The resulting PMSE channels are at least as functional in terms of low interference, high audio quality, airborne use and varying bandwidth as the current channels
 - Every effort is made to identify additional channels for PMSE quality audio channels as a result of the re-alignment project.

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CRCA Appendix:

Particular points in the 450-470 Consultation Document

1.4 Key Drivers

Of the key drivers identified, few apply to CRCA members' PMSE use for quality audio channels.

- PMSE is by its nature a specialist application. The volumes of individual equipment designs are small but they benefit the UK consumer as a whole by allowing regular sound broadcast coverage of ad-hoc and mobile events in good quality sound.
- There will be only small improvements in spectrum use for PMSE as a result of the re-alignment. The current techniques are highly spectrum efficient for the purpose and have historically been accommodated in narrow blocks of spectrum shared with third parties.
- One potential advantage would be if additional spectrum from increased efficiency or current military use could be deployed for PMSE.
- There is little or no evidence that incoming interference from continental Europe has been a significant problem, so the re-alignment is expected to have a minimal impact on interference in relation to PMSE.

1.5 Para 4 Republic of Ireland

CRCA consider it essential that the re-alignment of the same bands in the Republic of Ireland is a pre-requisite to the project proceeding in the UK. Unless this is achieved, there is a potential for the UK re-alignment to result in increased interference to PMSE users in Wales and the South West and North West of England. This point was also made by JFMG.

1.6 Risk of not re-planning the band

CRCA do not consider there is any substantial risk to members' use of spectrum in this band for PMSE in the event that the re-alignment was not to proceed.

2.1 Proposed Approach

We would make a particular plea that current PMSE allocations in the 44x MHz band are fully addressed in the nominal 450-470 MHz project.

While the PMSE spectrum used by CRCA members is managed by JFMG, it would be valuable for CRCA to have fuller access to the IWG to ensure our members are well informed and, where appropriate, to provide practical information from our members into IWG.

2.4 Practical experience

Following on from the above comment, CRCA is best placed to represent PMSE users in the Commercial Radio sector and wishes to be actively involved in the consultation of users during planning and implementation.

3.1.2 New technology and Services

We note the statement that there is an expectation that 'some PMR users will continue to operate cost-effective analogue systems' We would encourage a parallel expectation that PMSE spectrum used for quality audio channels by CRCA members should also continue to use analogue modulation and up to 50kHz channels. This scheme is very spectrum efficient compared to any comparable technique providing comparable performance.

3.15 Alignment process management

We note the Agency's intent to publish new assignments from Summer 2003. JFMG have indicated that PMSE users will not receive precise frequencies during 2003.

CRCA would wish to see the frequency blocks and timetable for change published as soon as is practicable and ideally before the end of 2003. This will allow users to identify in detail the extent of re-engineering and re-equipping necessary. This will be essential to allow each user to draw up implementation plans, to comment to the Agency/IWG and to be able to undertake the appropriate financial planning at an early stage.

4.1 Implications

As noted elsewhere, it will take CRCA a number of weeks to complete a survey of its members. However our initial 'dipstick' survey indicates that much less than 65% of our members PMSE equipment will be readily modified. Our expectation is that up to 50% of equipment may need to be replaced and a further substantial proportion will need considerable re-engineering. Following our fuller investigation, information on costs will be submitted.

4.2 Who will be affected

There are relatively few PMSE users of the band compared to say PMR users. However, the PMSE allocations have a substantial impact on the ability of broadcasters users to deliver 'locally relevant' programme content to the general public. These allocations are essential to maintain the 'immediacy' of sound radio in the eyes of the consumers.

Taken together, the (roughly) 100 PMSE licensed commercial radio users who share the PMSE allocations with other broadcast and entertainment users are likely to have in excess of 250 equipments. The sector might therefore be appropriately termed a 'large user'. In any case it is already clear that for our members (in common with large users) *band re-alignment will represent a significant re-engineering effort.*

4.3 Effects on industry

The cost of re-alignment would be easier to justify if there were to be substantial benefits. On the basis of current knowledge, CRCA members will not benefit from this project. Other users may and it would be appropriate for those benefiting to cover or at least off-set the re-engineering costs of CRCA members.

4.5 What will band alignment mean for everyone else?

Whilst many voice users will be able to use alternative solutions during migration, (eg; GSM for PMR) there is no obvious alternative for PMSE quality audio links. With many of these in use daily, the migration plan will have to be carefully established if these changes are to go unnoticed by the general public.

Annex A: Draft Regulatory Impact Assessment

Much of the body of the risk assessment applies to PMR operations.

There is little if any risk to PMSE for CRCA members were the re-planning of the band not to take place.

There is perhaps more risk to users and to the quality of PMSE services with the re-planning, particularly;

- During the transition period the risk of interference, blocking and de-sensitising will be greater due to the potential for unidentified conflicts or poor co-operation of individual parties
- There will be a risk of higher and/or unbudgeted costs to make good any unidentified conflicts
- Potential for incoming interference from the Republic of Ireland if the re-alignment in both nations is not co-ordinated
- Non-availability of kit whilst being re-engineered
- Possibility of reduced functionality of PMSE channels in respect of airborne allocations, bandwidth and audio performance.

The only identifiable benefit to CRCA PMSE users is the potential that further spectrum might be allocated to allow potential new users of PMSE and/or existing users to expand their operations.

In relation to compliance costs, these will be substantial and will be incurred in relation to:

- Loss of residual values in current equipment – probably small
- Cost of new equipment – probably high as much less than 50% of equipment will be re-tuneable
- Cost in manpower to plan and implement the changes – expected to be high
- Cost in specialised manpower and equipment to re-engineer base-stations and other installations.