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Our ref: GTL80030

Your ref:

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Dear Stephen

### **Consultation on 450 – 470 MHz Band Alignment**

Mason Communications (Mason) welcomes the opportunity to comment on the issues raised by the Government's proposal to align the 450 – 470 MHz spectrum with the European configuration as defined by CEPT Recommendation T/R25-08, and as set out in the RA's consultation document of December 2002.

Mason has considerable experience in wireless technologies, RF planning and systems design, and has an extensive track record in providing consultancy support to a number of large-scale users of the UHF bands. We have a number of clients who currently operate and/or use private mobile radio (PMR) and tele-control/telemetry systems in the 450 – 470 MHz band, predominantly in the Emergency Services and the utilities sector. Mason staff were also involved in the exercise some 10 years ago when the Gas and Electricity Industry went through a similar process to the 450 – 470 MHz band alignment, when PMR frequencies were re-organised.

Our track record with key business users of the UHF bands has, therefore, given us insight into the issues likely to be faced by those businesses as a result of the band alignment, such as operational continuity, costs and interference management. We also have considerable insight into the likely complexities that will be faced in defining the process and managing the implementation of a project of this nature, from our experience in project and programme management for large radio network infrastructure projects. Mason welcomes the opportunity to share this insight.

Our detailed comments are attached as an Annex to this letter.

Yours sincerely

Bob Warburton  
Director

Encl.



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Annex to Letter: GTL8003O  
Dated 10<sup>th</sup> March 2003

## **Consultation on 450 – 470 MHz Band Alignment**

### **Introduction**

The following comments are provided by Mason Communications (Mason) in response to the RA's consultation of December 2002, '*450 – 470 MHz Band Alignment: A Consultation Document*' (deadline for receipt of comments: 10<sup>th</sup> March 2003). To facilitate comments being made available via the RA's web site, our comments are provided electronically. We would be pleased to elaborate further on the points raised, if required.

### **General**

Mason is an independent telecommunications and IT consultancy with expertise in all aspects of wireless communications. Mason has a significant track record in providing consultancy support to a number of large-scale users of the UHF bands, notably the Emergency Services and utilities. This includes user requirements definition, business planning, strategy, project management and a wide range of RF coverage planning and systems design assignments, addressing PMR, telemetry and tele-control. Through this work, Mason has a detailed knowledge of the range of radio systems that currently utilise the UHF2 band in the UK.

This experience has given us a strong insight into the range of technical, cost and business continuity issues that we believe will be faced by the large-scale business users of the UHF spectrum, as a result of the proposed band alignment. In addition to the technical and commercial issues that will arise, Mason also believes that the complexity of the project implies that central co-ordination will be vital. Significant process and project management resources are likely to be required to achieve this central co-ordination, to manage the process of alignment across the industry.

In response to the main questions posed in the consultation, as presented in Section 5 of the consultation document, a succinct response to each question is provided below, capturing our views on the main issues likely to be faced.



**Consultation Question 1: Considering the band plan given in Annex C, what issues will businesses face as a result of band alignment?**

Mason believes that a number of commercial and technical issues will arise, principally:

- Business continuity and maintaining operational effectiveness during the frequency alignment, noting that the disruption and system downtime may span over an undefined period of time (particularly for large-scale users like utilities operating large multi-site, multi-frequency systems)
- Costs, primarily equipment, project management and labour costs. The likely costs will depend on whether existing equipment can be re-tuned or equipment replacement is required (which will be dependent on the frequency range over which the base station and mobile equipment can be retuned, the degree of labour required, and the frequency range within which the antenna system can operate). The costs will be highly dependent on the size of the system and costs are likely to be very high for large-scale users who have hundreds of radios to swap out in the retune. Overall equipment costs will include commissioning as well as hardware and so these costs have the potential to be high for users with a large number of radios. Cost of new equipment will also need to include the cost of replacing any ancillary RF equipment at the radio site (e.g. combiners etc.)
- Availability of resources to manage the re-tuning and maintain operational effectiveness during the re-tune period. It will be important to provide realistic timescales to businesses to give sufficient time to consider requirements for the renewal of equipment, as described above
- Increased instances of interference during the re-tuning period, particularly for users on shared radio sites (see answer to Question 2, below)
- Wider business impact issues, e.g. impact of downtime to utility operations on the general public or business users of the utility.

In terms of possible alternatives, Mason believes that it is unlikely that users of the UHF spectrum operating large scale PMR/telemetry systems will find it acceptable to use an alternative solution, unless only for a short period. Public cellular or data networks and certain licence-exempt solutions would be the main wireless alternatives that may be considered; however, effort will be incurred by users to determine the viability of such alternatives to meet user requirements. The criticality of operational systems of the utilities and the Emergency Services suggests that, in most cases, alternatives would need to be carefully considered.

In the case of the emergency services, the Home Office will vacate the current UHF assignment in line with the migration to the O<sub>2</sub> Airwave network. Mason notes that the current expectation is that Home Office frequencies will be released from 2005 onwards. In practice, Mason's experience in working with police forces in England and Wales is that the process of migration to Airwave includes a period of overlap (e.g. of around 6 - 12 months, or longer in some cases), where forces maintain their existing UHF frequencies until the Airwave migration, testing and user acceptance have been met successfully.



It is assumed that the RA will be tracking the Airwave migration process in close dialogue with the Home Office and PITO, so that any slippages in timescale are identified. This will be particularly important, given that the first stage of the band alignment relies on the Home Office vacating their current spectrum.

The feasibility of the new band plan being achieved will be reliant on effective project management to migrate users in accordance with the steps set out in the plan. It is unclear from the consultation paper how this process is to be managed and the timescales allowed for implementation of each step. It is assumed that the process will be centrally managed in order to minimise the overall commercial and technical impact on users and to ensure minimal service disruption. The band alignment process has the potential to cause considerable disruption to users otherwise, and so Mason believes that the task of managing the re-tuning process should not be underestimated.

As described earlier, users will also need to be given sufficient time to consider renewal of equipment, in line with the new plan. It is assumed that users should only be moving once. It is also assumed that intermediate steps (e.g. ‘parking channels’) will be avoided, given the additional cost and complexity that this would create from the user perspective.

### **Consultation Question 2: Issues faced by site owners/dealers/manufacturers**

Mason’s experience in RF systems and coverage planning suggests that there will be a range of issues faced by owners and users of shared radio sites during the band alignment. There is potential for increased levels of co and adjacent interference occurring over a significant period of time from other co-sited systems, as systems are progressively retuned. At shared sites, the change in frequency may also potentially create problems of interference due to intermodulation.

RF engineering at the radio site will also need to be considered since equipment re-commissioning will not be restricted to retuning just the transmitter and receiver but also other RF equipment at the site (e.g. filters, splitters, combiners). The retune may result in a need to replace some or all of the RF system between the base station and the antenna at the site.

### **Consultation Question 3: Comments on the Regulatory Impact Assessment**

The RA’s consultation document describes the regulatory drivers behind the band alignment, with the three basic drivers being:

- Removal of continental interference
- Allowing existing systems to grow and to expand
- Introduction of new technology.

Based on our earlier comments, Mason’s view is that three additional costs should be included in Table 2 of the Regulatory Impact Assessment, as follows:



- Cost of new equipment; i.e. for base station, mobile and antenna system replacements, the likely cost of new equipment, including installation and commissioning should be recognised
- Costs to business due to downtime and service disruption
- Project management (e.g. in managing issues such as procuring contractors, equipment audits, scheduling, downtime, equipment commissioning, testing).

In considering the potential benefits, it is noted that the band alignment should allow a number of important spectrum management benefits to be realised, for instance:

- Rationalising existing assignments
- Maximising co-channel frequency re-use for new assignments
- Improving the quality of the assignment.

A further potential benefit is that equipment that cannot be retuned is likely to be older technology operating to a lower specification than current equipment and so, taking this equipment out of service and replacing with new equipment is likely to be of wider benefit, since the new equipment will probably have an improved RF performance. This will therefore result in a 'cleaner' RF environment.

It is assumed that these benefits will, in time, be realised as benefits to the band users, in the first instance, by receiving a higher-quality assignment. A further potential benefit that users may see is through improving frequency re-use in the band, since this is likely to result in demand for channels being more easily met at UHF. Under the RA's current pricing algorithms, this could potentially benefit users in terms of the price of the radio licence if the same number of users can be accommodated in a smaller amount of spectrum. The implementation of Spectrum Trading may offer further benefit to users, if the band alignment facilitates a market for acquiring licences through the market.

Mason's view, therefore, is that tangible benefits seen by the band *users* are likely to be:

- Improved quality of channel assignment
- Positive impact on the value of the assignment and/or the licence fee.

The benefits suggested by the RA in Table 2 of the Regulatory Impact assessment are largely focussed on increased revenue, either from access to a European market or from more UK customers. These benefits are more directly related to the manufacturing/supply industries.

It is noted that proposals are invited from users to quantify financial costs and benefits to populate Table 2 in the Regulatory Impact Assessment. Mason suggests that some form of independent validation of this data should be carried out in order to ensure the consistency of values being proposed. There are likely to be different views across the industry depending on particular business perspectives and, hence, there is a risk of inconsistency in the values proposed. An independent assessment of costs and benefits may also be of benefit, addressing, for instance, the cost and viability of alternative solutions.



**Consultation Question 4: Any further comments**

Mason considers that, to implement the band alignment in the steps described in the proposed band plan, will require considerable co-ordination of a large number of users, in order to minimise overall commercial and technical impact on users and ensure minimal service disruption. A central co-ordination point will, therefore, be essential to manage a project of this scale, given the complexity of the project.