

The Response of Motorola Ltd.

To

UK Defence Spectrum Management

A Consultation on: An Implementation Plan for Reform

Motorola is grateful for the opportunity to respond to the consultation on the Implementation plan. The utilisation of the radio spectrum is a key parameter in the future economic and societal well-being of the UK now and in the future.

Even though we see all the questions to be important, as a manufacturer, Motorola sees it to be most helpful to limit our responses to those items having direct or indirect relation to equipment issues.

We would like to highlight the following key themes.

Key Themes

1. The conditions under which military (or any other Government-held) spectrum is shared is central to the success of the exercise. If the retained rights are such that the use of the spectrum is impeded, the lost opportunity cost remains lost. This could translate to very significant amounts of money in bands where there is the possibility of improving the future digital divide.
2. Motorola prefers spectrum to be released rather than shared wherever possible to avoid the problems noted in point 1.
3. Spectrum bands having the possibility of regional or global harmonisation offer the UK the chance for significant new services, supported by the economies of scale. Some of the bands considered for audit fall into this category.
4. It is recognised that spectrum is already shared with the emergency services. We note however, that the current emergency services communications are suffering congestion with their existing assignments and also need to greatly expand their data traffic. Some of the bands listed in the 400MHz region are very important for these types of users were they to be given access to these resources.



Answers to Questions

Question 1. Do you agree that the MOD has identified the options and factors that MOD should consider before deciding whether or not to extend the audit of the spectrum it uses?

Motorola understands from the document that the audit of the spectrum relates to the importance of the current defence use. We believe however that the audit of the spectrum would benefit by the inclusion of the wider issues of how much value the spectrum could have were it to be release for other uses. We accept that this affects some bands more than others. It is in the spirit of this wider audit that motorola offers the following response to this question.

Motorola supports the general approach taken in the implementation plan. We note there are a number of factors for consideration within the defence arena.

We highlight the negative economic impact of the impending digital divide in comparison with competitors in other countries. Advances in technology permit the deployment of wireless connectivity as never before which offers the potential of reducing the digital divide were spectrum listed in the consultation to be released. This in turn will, of course, translate into social value also.

At least some of the bands noted in the plan potentially have direct impact on the ability of the UK to cost-effectively deliver next generation services to a greater percentage of the population than would otherwise have been possible using fibre only. Thus the radio spectrum can be considered as an opportunity for coverage extension. The bands around 3.5GHz could be particularly important in this context.

The services to be delivered have a very different technical profile and also a very much higher value to the user which means the ARPU that can be expected is higher.

We caution that whilst there is a lot of spectrum under discussion in these bands (for example the bands around 3.5GHz), it is nowhere near enough to provide any such service without careful planning and a proper regulatory environment. For example, were the band to be shared rather than released and regulation mandating so-called "Detect and Avoid" interference protection applied to protect the incumbent services it would effectively terminate the opportunity to deliver long duration, high bandwidth content at the outset. Thus the importance of the spectrum would be much reduced.

Example:

If we assume that spectrum-based services can economically reach 30% of the population (a good proportion of the people who will not able to gain connection by fibre in the early years) and that entertainment such as sport is included in the suite of services available, the annual top-line revenue from households could be well over £2Billion. If Detect and Avoid regulation (or any other impeding regulation) were to be applied to the band, this could be zeroed. This is because the services that could be delivered may be very little



better than that which can be provided by the copper circuits in place today and so it may be difficult to identify a business case to deploy anything new at all.

Thus the arrangements for sharing a band are a matter of great concern.

Question 2. Do you have any views on the priority with which MOD should audit its spectrum use?

Motorola supports the priority chosen. We further note that there is little point in making available some bands significantly before the likely users are in a position to be able to use them. However, information such as which bands are to be made available, when and under what conditions are extremely important facts to make provide as soon as possible.

We particularly note that opportunity for the emergency services and critical professional installations (chemical plants etc.) to make good use of spectrum in the 406.1 to 430MHz range and the opportunity for next generation broadband delivery in the 3GHz band.

The 406.1 to 430MHz range has obvious attractions for the emergency services. However we would also point out that there are significant applications that are currently difficult to address in the UK. These are such as oil refineries and other critical large-scale installations and facilities that would benefit greatly from an advanced communications network at the site to assist with operations. At present this is very difficult to provide in the UK.

The 3.5GHz range is very likely to become a world-wide band for broadband connectivity. Its release for this purpose is expected to result in significant economic and social benefit for UK plc.

Motorola notes the significance of the 5GHz range for potential short range licence-exempt usage with the opportunity for distribution of services in the home or office as a particularly attractive use. However, recent changes in the EU brought about by actions of the meteorological radar community have resulted in detect and avoid regulation being applied and so the uses of the band are now restricted. Motorola offers no computation of the lost opportunity cost but it is of course expected to be large.

The band 2310 to 2450MHz is especially important following the 2007 World Radio Conference because it was identified for IMT services. It is not suggested that there is any need to accelerate the timescale of the application of RSA but it would be very useful to understand what regulation will be applied to this band at an early stage to inform decisions about investments that could lead to significant deployments in the UK.

We note the band 4500 to 5000MHz as being helpful for hot-zone applications for the emergency services as this aligns with other large markets, thus providing the opportunity for scale economies leading to adequate ranges of equipment for those



users. It is noted that recent work in CEPT has identified a band slightly above this for hot zones for the emergency services. We believe the permitted power level in this new identification to be very low and so their use may be limited. Therefore the 4500 to 5000MHz band may still have significance despite these recent CEPT actions.

Question 3. Do you agree with the phased approach to applying for RSA that the MOD is proposing?

See the answer to question 2.

Question 4. Do you agree with the MOD's plans for releasing and sharing the spectrum it uses?

As noted in the answer to question 1, the conditions under which the band is shared are highly significant. We make no specific comment on the text of the consultation but do stress the importance of ensuring that the spectrum shared can actually be used to deliver valuable services and that retained rights are minimised.

Question 5. Do you agree with MOD's priorities for releasing and sharing spectrum?

In general, Motorola prefers in all cases that emphasis to be placed on the release of the spectrum rather than a strategy of sharing (under protection rules). Released spectrum can be much more efficiently utilised for other services and also financial certainty is preferred in investment terms.

Sharing is particularly difficult because technologies will evolve at a fast rate and services will converge. Thus rules for sharing could result in the spectrum becoming less valuable over time as the rights available to the commercial user are insufficient to maintain its value. Potentially, the residual opportunity cost (and therefore the licence fee paid by the military sharer) could return to reflect 100% of the market value over time.

Question 6. Do you agree with MOD's outline timetable for initial spectrum releases?

Yes.

Question 7. Do you agree that MOD has correctly and fully identified the factors and options that should be considered before deciding to release and acquire spectrum in the market?

Motorola is unable to comment on this.



Question 8. Do you agree that MOD has correctly and fully identified the factors and options that should be considered before deciding the best means with which to interact with the market?

No comment.

Question 9. Can you identify any different approaches for the MOD to manage the spectrum it uses and engage with the market to deliver better value for money for defence and the taxpayer?

Motorola makes no further comment beyond again stressing the importance of ensuring the regulations applied to the spectrum are not such as to preclude its use for the delivery of high value services wherever possible.

Question 10. Which options (from paragraph 6.7) should be considered, or discounted, and if so why; either in respect of options already identified in section 6, or additional options, not identified?

No comment.

Question 11. Which issues relating to section 6 should be considered when evaluating options, and if so why; either in respect of issues already identified in that section, or additional issues, not defined?

No comment.

Question 12. Is the scope of decisions required against each of the four questions at paragraph 6.3, as indicated in section 6, sufficient and, if not, how and why it should be extended?

No comment.

Questions relating to this response should be directed in the first instance to

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