

AWARD OF AVAILABLE SPECTRUM: 1452 – 1492 MHZ

Vodafone UK's response to Ofcom's consultation

9th June 2006

Vodafone welcomes the opportunity to comment on Ofcom's proposals to award spectrum in the 1452 – 1492MHz band (the 'L-Band'). This band represents a significant amount of spectrum and has the potential to be used to provide a range of services, including mobile multimedia and broadcast services. The draft RSPG Opinion on broadcast multimedia services¹ ('the draft RSPG Opinion') recognises that "*the availability and supply of high quality multimedia services with attractive new features could bring significant benefits to consumers on a pan-European basis.*" While the L-Band is not the only spectrum that may be used to provide such services, its availability now makes it a potentially attractive candidate for broadcast multimedia, provided that appropriate transmission and interference parameters are applied.

Ofcom must ensure that, in its haste to bring spectrum into use, it does not hinder the development of new services through inefficient spectrum allocation. The L-Band is currently arranged to support T-DAB and is unused. There are a number of different technologies that may be used in this spectrum, with each having an optimal bandwidth and parameters for transmission power and interference protection. Any spectrum packaging that favours inappropriately one particular technology or use will be inefficient and will subsequently need to be corrected through secondary trading. Ofcom will achieve efficient spectrum use by packaging spectrum in a way that allows the market to determine the optimum configuration. This can be achieved in two ways: either by allowing bidders to aggregate small blocks together, or by awarding the spectrum in a single block to a band manager who would sub-allocate access to the spectrum over time. The other options that Ofcom has considered (i.e. options 3 & 4) risk preferring particular technologies, according to the bandwidth of the spectrum package, because the block size will favour the use of a particular technology. Ofcom should not attempt to direct the market towards particular uses or technologies by specifying the bandwidth and configuration.

Do stakeholders agree with these proposals for the award of this band or have any other comments on the contents of this document?

Ofcom is right to consult upon the process for awarding licences for the L-Band spectrum. The band is unused and is suitable for a number of applications. Ofcom has set out proposals for dealing with the interference environment and for packaging the available spectrum into lots that can be awarded at auction. These proposals and the questions set out in the consultation document will help to ensure that the L-Band is awarded and used efficiently. However, Ofcom has not considered whether its plans for the L-Band would be better served by bilateral negotiations with neighbouring states or a general review of the Maastricht Special Arrangement ('MSA'), as suggested by the RSPG.

The renegotiation of interference parameters may be achieved either through a series of bilateral negotiations with neighbouring member states, or by a large-scale review of the MSA by its

¹ Radio Spectrum Policy Group Opinion on *The Introduction of Multimedia Services in particular in the frequency bands allocated to the broadcasting services*, Brussels 11th May 2006

signatories. The former approach allows Ofcom to proceed more quickly towards an award of spectrum than would be possible by multilateral negotiations. However, the latter approach would provide more a consistent interference environment in each state, which in turn could help pan-European services to develop. Both approaches have advantages and disadvantages, but Ofcom should consider the potential impact to the development of services of any delay to the award of spectrum.

Ofcom is correct to award licences without specifying the technology that should be used. Ofcom has often stated its intention to award spectrum on a technology-neutral basis and allow the market to determine the most appropriate technology. Where an alternative configuration is required, a secondary market will allow bands to be sub-divided or amalgamated as necessary. There is sufficient bandwidth available for licensees to adopt a range of technologies. However, Ofcom's discussion of the different packaging options suggests either that it believes that certain technologies should be favoured by the configuration, or that Ofcom lacks confidence in its policy of spectrum markets to yield the benefits that Ofcom has claimed.

Vodafone supports the use of auctions as a fair and transparent means of allocating spectrum. The choice of auction format must reflect the specific circumstances of each spectrum award, according to the range of lots available. If Ofcom chooses to award the L-Band spectrum as a large number of relatively small lots, a simultaneous multi-round ascending auction is likely to be the most appropriate format, as bidders will be able to select multiple lots and adapt their bidding strategy as the auction proceeds.

Do you agree with Ofcom's proposed approach to address the international issues resulting from the Maastricht Plan applicable to the 1452 – 1479.5 MHz frequency band in this spectrum?

The modelling work performed by Analysys-Mason shows that the interference environment is of critical importance to the L-Band spectrum. The MSA provides a framework for managing interference that provides certainty, if not a great deal of flexibility, to spectrum users in the UK. If Ofcom is minded to award the spectrum quickly, then it would be reasonable to proceed on the basis of the known interference environment that can be derived from the parameters of the MSA. This would ensure that bidders were informed as to the nature of the spectrum available.

However, the MSA was founded on an assumption of T-DAB deployment across Europe and the transmission parameters were not intended to support alternative technologies or deployment scenarios. As Ofcom's stated policy is to promote flexibility and technological-neutrality through licensing, it is entirely appropriate for Ofcom to seek an interference environment that is consistent with these goals. This will require renegotiation of the parameters of the MSA, even though it may slightly delay the award to do so. As long as the delay is not excessive, any disadvantage from delay would be offset by the benefit of greater flexibility.

Ofcom suggests that maintaining the current MSA would cause uncertainty², even though the interference environment would not actually change. It would be more correct for Ofcom to suggest that this option leaves bidders with little flexibility to deploy an alternative technology to T-DAB. Uncertainty *will* arise if Ofcom awards the spectrum before it has a firm plan for concluding its negotiations, whether these negotiations are carried out bilaterally or multi-laterally. It is clear from the modelling work that certain blocks of the L-Band are more affected than others by the

² "moving ahead with the current Maastricht plan would leave the uncertainty on spectrum usage rights with the bidders."

parameters of the MSA, and moreover that certain states have greater significance than others in respect of the interference parameters for particular blocks. The results of Ofcom's renegotiation of the interference environment will have a significant impact upon the potential value of certain spectrum lots. If Ofcom is not able to conclude these negotiations before an auction, Ofcom must indicate clearly the anticipated outcome in order for bidders to be able to assess the value of different lots.

Do you agree with Ofcom's proposed approach to award of all the spectrum between 1452 and 1492 MHz at the same time and as soon as practically possible (i.e. a simultaneous award of the top 12.5 MHz and the lower 27.5 MHz of this spectrum)?

It is reasonable for Ofcom to award spectrum in both parts of the L-Band at the same time, subject always to the need for Ofcom to be certain as to the interference environment.

What are your views on the preferred packaging option for the lower 27.5 MHz of this spectrum?

Ofcom's policy, as set out in the Spectrum Framework Review, is to promote technological-neutrality in the award of any spectrum licences and to allow the market to determine the most efficient use for spectrum. When packaging spectrum, Ofcom should ensure that it does not direct the market towards a particular technology or application by packaging lots into a bandwidth that suits a particular technology. This implies two potential approaches: either Ofcom can award the spectrum in the smallest possible block size and allow bidders to obtain their desired bandwidth by aggregating blocks, or Ofcom can award spectrum in the widest possible block size and allow licensees to trade surplus spectrum in a secondary market.

Option A is the most appropriate option for packaging spectrum in the lower 27.5MHz of the L-Band, as it confers two principal benefits. Firstly, it removes the risk that Ofcom may inherently favour one technology over another by packaging spectrum into varying bandwidths. As the consultation document explains, various parties have indicated their interest in deploying different technologies in the L-Band, and these technologies require bandwidths ranging from 1.5MHz to 8MHz. These bandwidths can be achieved by aggregating different numbers of blocks. A combinatorial auction process would allow bidders to bid for only as much spectrum as they needed. Secondly, and most significantly, the interference environment determined by the MSA relates to these 1.5MHz blocks. As the Analysys-Mason modelling work shows, there are some blocks that are less constrained than others. Even if Ofcom negotiates more favourable interference parameters with other states, in those states where DAB has already been deployed it is arranged in 1.5MHz blocks. By allowing bidders to select their preferred blocks from the 16 available, Ofcom will permit bidders to assess the value of their bid against the interference environment as it applies to those particular blocks.

A less preferable approach to packaging spectrum would be Option D, that is to award a licence for a single block comprising 1452 – 1479.5MHz. This option is consistent with the concept of a 'band manager' who would manage access to the spectrum through sub-allocations on a spectral, geographic or temporal basis. Awarding a single licence to a band manager has the advantage of removing the timescale imposed by Ofcom's desire to put spectrum into use as soon as possible and transfers the technology risk from Ofcom to the band manager. The band manager would assess the commercial potential of different technologies to use the band in return for an economic rent. By allowing this assessment to take place over time, and permitting re-allocation between

uses, the band manager is able to reach a more efficient allocation of spectrum than is possible from a single award.

The value chain in broadcasting industries commonly comprises a number of different entities, with a separation between the parties responsible for customer management, content creation and infrastructure construction and operation. The holder of a single licence for the band 1452 – 1479.5 MHz may choose to construct and operate broadcast infrastructure that uses the spectrum and then license other parties to access the infrastructure. It is not necessary for Ofcom to mandate infrastructure-based competition in order to provide for competition in services to consumers. The presence or otherwise of infrastructure-based competition should not determine how Ofcom packages the L-Band spectrum for award.

Options B and C are not preferable, because they implicitly support a particular technology or use through the choice of bandwidth. A range of different technologies may be suitable for use in the L-Band, each with different bandwidth requirements. It would be contrary to Ofcom's stated policy for it to favour one technology over another through its choice of packaging option. Moreover, an allocation policy such as Option C that has different bandwidths for different blocks risks being an arrangement that exists only in the UK, thereby placing additional constraints on the development of a pan-European market for equipment and services. The draft RSPG opinion notes that, "*...there may also be a need for action at European level to remove unnecessary constraints in current licences for broadcasting, mobile and fixed services in order to enable the introduction of multimedia services. **These obstacles can be found in national allocation provisions...***" [emphasis added]. Packaging options B or C would be inconsistent with Ofcom's policy of allowing the market to determine the optimum use of spectrum, if the packaging prevented spectrum users from developing pan-European services.

Do you agree the upper 12.5 MHz of available spectrum should be awarded as one lot?

Vodafone has no views on whether it is preferable to award the upper 12.5MHz of spectrum as one lot or many lots.

Do you agree with the proposals for an industry code of practice on engineering coordination to control adjacent-channel interference?

Ofcom's proposed engineering Code of Practice for coordination of transmitters demonstrates the difficulty of determining a technology-neutral Spectrum Usage Right. A spectrum usage right that protects other spectrum users from harmful interference requires knowledge of how those other users have deployed technology. The coordination process can only start once the successful bidders in the L-Band auction have chosen their technology, and planned their ideal deployment of that technology for the intended application.