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Vodafone Response to

Ofcom call for inputs:

Making more spectrum in the 1.4GHz band available for mobile services

1. Introduction

Vodafone welcomes the opportunity to respond to Ofcom's call-for-inputs regarding the coexistence analysis for further release of 1.4GHz spectrum. As Ofcom highlights, Vodafone is already a licensee of the band. We are therefore able to offer practicable experience of deployment scenarios, and also of coexistence with adjacent users.

2. Answers to Questions

Question 1: Do you have any comments on the coexistence analysis we have carried out?

It is essential that licensing conditions strike a balance between protecting existing users, particularly where this involves safety-of-life applications, and not imposing conditions which are likely to sterilise the usage of the spectrum released. In this context, we note that for maritime applications in particular, whilst MSS is of critical importance at sea, in the port/port approach areas which are the subject of this consultation MSS is one of a series of communications mechanisms, for example in the Thames estuary and Solent areas ships would likely have terrestrial mobile communications with which to summon help. This does not obviate the need for Ofcom's careful analysis, but should influence Ofcom's thinking where regulatory judgement calls need to be made.

In principle we support the usage of parameters defined in ECC 263. However, these must be tempered with practical deployment characteristics, which in some cases may be specific to UK deployments. ✂

We would particularly point to the assumed antenna heights and downtilts not being reflective of UK deployments. Taking ✂ as an example, Vodafone's median antenna height for L-band deployment is ✂ (mean ✂) in contrast to 30m assumed in the Ofcom analysis, and median downtilt (electrical plus mechanical) is ✂ (mean ✂) in contrast to 3° in the analysis. Indeed, only ✂% of masts were at or above the 30m height assumption used in the analysis, and only ✂% of masts had downtilt at 3° or less. Further, whilst maximum transmit power is 68dBm/5MHz, more typical deployment is at ✂dBm lower. The values in the ECC 263 report are more reflective of European deployments where far higher masts are the norm.

We therefore believe that Ofcom should repeat its analysis using typical deployments of Vodafone and 3UK: we believe that the required data has already been supplied via responses to s.135 Information Requests associated with Connected Nations, but would be happy to respond to further requests as required.

Question 2: Do you have any comments on the proposed sizes and implementation methods for the PFD limited and coordination zones, both individually and as hybrid options?

Question 3: Do you consider that PDF limited/coordination zones defined using complex polygons would make deployment of this spectrum for mobile more complex than zones which are defined by simple shapes?

We agree with the usage of PFD-limited and coordination zones, when set appropriately.

✂ it is essential to consider the specifics of terrain at a given location. For this reason, acknowledging the additional complexity, we support the need to define more complex polygons on a site-specific basis.

Question 4: Do you have any other suggestions for how we might make the 1492-1517 MHz block available for mobile while protecting satellite use of the adjacent band?

We note that Ofcom's analysis has considered the best and worst performing Inmarsat terminals. Given the potential effect on the utility of the spectrum, we believe that Ofcom needs to go a step further and gain evidence from Inmarsat as to the volume of such devices typically in UK waters/airspace, and potentially evidence as to the level of usage. At the extreme, if the older/worst-performing terminals are not extensively-used in the UK, there may be a case for disregarding them from the analysis. Further, if such terminals exist but practicably there have been no distress calls using them over a given period (for example because there is overlapping terrestrial coverage), then this may colour the emphasis that Ofcom places on protecting the capability. This situation may well also vary on a per port/airport basis.

Question 5: What are your views on the timescales for relaxing the PFD limits and coordination restrictions?

We recognise that this matter is not entirely within Ofcom's gift, as the ability to relax PFD limits and coordination restrictions is contingent on device penetration. Nonetheless, Vodafone believes that Ofcom has an important leadership role to take on the topic: if Ofcom were to publicise that poorer performing devices were to be no longer afforded protection from a given date, then this would send a powerful message to the users of such equipment to replace them or face safety consequences.

We are not in a position to propose a date, absent information on the penetration and usage of the older equipment, however given the consequences for mobile network deployment and spectrum efficiency, the timing should be sooner rather than later. We note that if, for example, a 5-year timeframe was adopted, this could run from the point at which Ofcom issues its conclusions in early 2024 rather than the date from any award which will likely be 2025.

Question 6: Do you have any initial views on how the coordination we are proposing should be carried out? In particular, do you consider this should be conducted by Ofcom or the licensee?

Not having seen the specifics of the coordination requirements which Ofcom would impose, our working assumption is that it would involve examination of the aggregate transmitted power across the spectrum to be awarded. If this is correct, then – absent the PFD being apportioned across the frequencies - the answer to this question is inextricably linked to whether the 25MHz in question is awarded to a sole or multiple licensees.

If multiple licensees, then an individual licensee isn't able to carry out the calculation unilaterally and cooperation between the licensees is required, either via Ofcom or a neutral third party such as DMSL. Our preference would be for the licensees to be mandated to agree a coordination scheme (which on request could be Ofcom), in order to maximise operational flexibility.

If a single licensee, then we believe that the coordination can be carried out by that licensee itself, as is currently the case for (arguably even more safety-critical) coordination between radar and the 2.6/3.4GHz bands. As with existing licences, this coordination exercise would, of course, be subject to scrutiny by Ofcom (plus, in the case of airports, the relevant aviation regulators also take a suitable interest).

Question 7: Do you have any views on the potential impact of our proposed options, including impacts on specific groups of persons or more general impacts?

We refer Ofcom to our responses to the earlier questions – if the analysis is based on theoretical averages which are not relevant to the UK market, there is a risk of spectrum being unnecessarily quarantined. It is therefore important that UK specifics are taken into account.

Question 8: Do you consider an auction would be an appropriate way to make the upper 1.4 GHz spectrum available for mobile use? If not, what other methods do you think Ofcom should consider for making this spectrum available for mobile use?

Question 9: If you consider an auction is appropriate, do you have any initial views on whether a single round auction or a multiple round auction would be more appropriate?

We believe that the upper 1.4GHz band would be best awarded by auction.

A multiple round auction is more appropriate than a single round/sealed bids approach. Whilst a single round auction has benefits in simplifying the process, we believe that benefits of providing bidders the ability to express value and counterbid presented by a multiple round approach wholly outstrips these. Further, a well-designed auction will enable bidding on specific quantities of spectrum, whereas it is not clear how a single round approach could support anything other than bidding on the full 25MHz available.

Potential bidders are well-versed in the operation of clock auctions, as is Ofcom. We therefore do not believe that implementing an auction represents a disproportionate approach for stakeholders.

Question 10: Do you have any views on the appropriate lot sizes for making this spectrum available?

It is plausible that the outcome of a future auction is that 25MHz of spectrum is awarded to a single bidder. However, we cannot rule out that the auction results in spectrum being awarded to two (or more) bidders – for example 3UK might wish to expand its 20MHz holding to 30MHz, or Vodafone might wish to expand its 20MHz holding (especially if there is an associated defragmentation process).

We therefore favour a 5MHz lot size, albeit acknowledging that this would need to be combined with an auction design that allows bidders to specify a minimum quantity of spectrum (given a bidder with no current 1.4GHz holdings would unlikely wish to obtain only 5MHz). As an alternative to the ability to specify a minimum acceptable winning outcome, Ofcom might consider having different lot sizes (e.g. 1x10MHz and 3x5MHz).

Question 11: Do you have any views on the potential impact on consumers, citizens and/or other stakeholders of auctioning the spectrum or the different auction formats?

No further views: we look forward to working with Ofcom on the format of the forthcoming auction.

Vodafone UK
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