Vodafone Response to Ofcom Consultation: Award of 1492-1517 MHz spectrum for mobile services

1. Introduction

Vodafone welcomes the opportunity to comment on Ofcom's proposals to award a further 25MHz of L-band spectrum for mobile usage. This response answers Ofcom's questions relating to technical conditions and coexistence, with which we largely agree. A supplementary response in the timelines requested by Ofcom will provide our views on the award proposals.

2. Answers to Questions

Q1. Do you agree with our proposal that 'Phase 1' protections would be required to avoid the potential for significant disruption at ports and airports?

We acknowledge that Phase 1 protections are required in the vicinity of ports and airports in order to protect safety-of-life applications.

Q2: Do you agree with the list of airports we propose to protect, in Annex A8?

We note and agree the list of airports provided at Annex A8.

Q3: Do you have any comments on the two options we have proposed for the ports which would require protection, noting the further detail (and requests for specific evidence) in Annex A7? Q4: Do you agree with our preference to reduce these restrictions to 'Phase 2' levels over a shorter timeline than the natural lifecycle of the terminals?

We support Option A, i.e. an accelerated Phase 1 period of five years. Whilst sympathetic to the complexity of upgrading satellite terminal equipment, this cannot be allowed to dominate the ability of mobile operators to roll out economically and socially valuable spectrum for public usage.

We note the evidence of Japan, suggesting that the CEPT analysis could be overly conservative. Furthermore, as the band was identified for IMT usage in 2015, it cannot be a surprise to the satellite industry that regulators are now moving to award licences. ECC notes a natural lifespan of a terminal to be 20-30 years, meaning that by the end of Phase 1 under Option A, the bulk of terminals will have been deployed after it was known that there would be a need to coexist with mobile usage. Of the remaining, Ofcom's

evidence – and that of Japan – appears to point to a prevalence of terminals which are not susceptible to interference in any case.

The counterfactual of Option B would lead to significant deployment challenges in the vicinity of ports, leaving large swathes of geography with an inability to support the band on a high-power basis. The economic impact would be profound, and we question whether a realistic case can be made for this approach.

Q5. Taking into account the further detail in Annexes A7 and A8, please provide any evidence:

- that a shorter period, around five years, for the relevant receivers to be replaced or upgraded is not technically or practically feasible; or
- of the impact that a longer period of up to 20 years may have on the ability of MNOs to use the spectrum and the benefits to consumers and citizens that would be foregone

We do not hold any information on the practicality or cost of receiver replacement. However, we note the evidence from Japan that would support a lower number of devices impacted than ECC studies suggest. In the event that there is interference for ship-borne equipment, we would suggest that there may be alternative procedural measures. For example, we understand that usage in ports/vicinity of ports is generally driven by the requirement to test equipment before sailing (noting that areas around ports are well served by mobile networks so not solely dependent upon satellite access) – if it really does prove impossible to replace the terminals in five years, it is plausible that a "quiet time" could be agreed with mobile licensees where mobile usage is powered down for e.g. a nominated hour, noting that L-band spectrum is used in heavy demand periods and from a sustainability perspective may be powered down at quiet times (e.g. overnight) in any case.

As outlined in our response to Question Four, extending Phase 1 to twenty years would have a considerable impact on the deployment of the spectrum. We believe that the Phase 1 limitations would lead to a need to not deploy the spectrum on a macro-layer basis in the vicinity of ports and airports (or at the least, to either operate on reduced power on sectors facing towards the ports, or power down such sectors). This would significantly complicate deployment, potentially to the point of precluding deployment in those areas. This is manageable for a five-year period but would be a more serious problem if applied for twenty years.

Q6: Do you agree with our proposal not to put in place restrictions on IMT use of this spectrum to protect:

(a) land terminals;

(b) potential future uses of the 1.5 GHz spectrum; or

(c) PMSE users.

We agree the proposals not to protect such applications. Given the coverage of terrestrial mobile networks (together with future expansion to satellite provision via D2D), we do not believe that there will be an Inmarsat land terminal which is of such critical national importance that the application cannot be served by alternate technologies. We consider the risk to PMSE to be low; in the event that this isn't the case, these applications tend to be short-term, so the cost of migration to other bands would be limited.

Q7. Are you able to provide any evidence on the likelihood of audio links suffering interference from IMT use of 1492-1517 MHz?

We are unaware of any evidence of potential interference. However, whilst acknowledging that such links are pencil-beam (albeit with side lobes), it may be worth checking for interference to PMSE audio links in the vicinity of deployed fixed links that have been using the band until now.

Q8. Do you agree with our proposed approach to coordination?

Yes, we believe that the proposed approach strikes the right balance between protecting adjacent users and not unnecessarily impeding network rollout.

Q9. Do you agree with our proposal to define PFD limited zones as complex polygons? Would defining them as a set of points, rather than an entire boundary, make coordination calculations easier for licensees?

We agree that the usage of complex polygons will result in the most efficient utilisation of spectrum, by limiting coordination to areas that strictly require it. Our preference is for the provision of shapefile data setting out the entire boundary in order to minimise the risk of misunderstanding. However, we would be open to definition by a series of points should that be the preference of all stakeholders.

Q10. Do you agree with our provisional view that not defining coordination zones around ports may be simpler for licensees than complying with multiple different coordination zones, particularly while Phase 1 PFD limits are in place?

We agree, so long as Phase 1 is set at five years. In the event that Phase 1 is extended to twenty years, then we would wish to extend coordination to being on a per-port basis (accepting that these may overlap).

Q11. Do you have any feedback on the coordination procedures (as set out in Annex A10) or the specific parameters proposed?

We accept the procedures and associated parameters. We note that the parameters were calculated on the basis of assumed transmit power levels which are higher than we have deployed in adjacent bands (when taking into account antenna gain). However, it is probably prudent for Ofcom to take this approach given the potential for improvements in equipment/antenna performance during the lifetime of the licences.

Q12. How difficult would you find it to comply with our proposed coordination requirements? In particular, we are interested in information from potential licensees on how the proposed coordination zones would affect their deployment processes and decisions.

As set out in our response to Question Five, the effect of the restrictions in Phase 1 are such that we would probably seek to refrain from deploying the band in the coordination zones on a macro basis, other than where there were acute capacity demands (and in this situation, we would probably seek to refrain from deploying sectors facing the relevant port/airport). For Phase 2, we interpret the restrictions as being relatively similar to those already in place for other bands where we protect adjacent users.

Q13. Do you have any comments on our proposal that licensees should carry out their own coordination, on the basis of coordination parameters set by Ofcom?

We are well-versed in carrying out similar coordination in other spectrum bands, so are comfortable that should we be awarded a licence to utilise the spectrum, we could implement Ofcom's required procedures.

Vodafone UK
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