Vodafone Response to Ofcom Consultation: Future authorisation of the 1900–1920 MHz band

1. Introduction

Vodafone welcomes the opportunity to comment on Ofcom's proposals for the future of the 1900MHz (previously known as 2100TDD mobile) band. We are supportive of the need to modernise the railway communications network, and also recognise the use case for temporary ESN provision. As such we are broadly supportive of the proposals in the consultation, so long as there is no adverse impact to adjacent spectrum users.

2. Answers to Questions

Q1. Do you agree with our analysis of potential demand for the 1900 MHz band? Are you aware of any other potential demand for this spectrum, including any demand specific to Northern Ireland?

We believe that Ofcom has addressed the principal use cases that have been suggested.

Q2: Do you agree with our identification of FRMCS as the optimal use of the 1900–1910 MHz spectrum?

We agree that the identification would align with international harmonisation of frequencies for FRMCS.

Q3: Do you agree with our identification of ESN Gateways as the optimal use of the 1910–1915 MHz spectrum in Great Britain? Do you agree that it is too early to identify an optimal use of the 1910–1915 MHz spectrum in Northern Ireland at present?

We consider that the scope for coexistence issues with adjacent public mobile service increases as the application is placed closer to mobile frequency band. As such, given that the ESN gateway is implicitly a temporary usage in a given location, we believe that it is sensible to place it in the 1910-1915MHz frequencies, so that any coexistence issues are time-bound.

Q4. Are you aware of any low power use cases suitable for the 1915–1920 MHz spectrum?

We are unaware of any low power use cases. However, returning to the observation in our response to Q3 that the prospect of coexistence issues increases as new use cases get closer (in frequency terms) to mobile terminal uplink, we believe that if anyone did suggest such a use case, there would need to be rigorous

analysis to demonstrate that public mobile services would not be compromised. We believe that a prudent approach would be for Ofcom to reserve these frequencies as a guardband.

We note that ECC report 318, on which Ofcom's proposals for FRMCS coexistence rely, assumes a 10MHz separation between FRMCS and public mobile, which is already being eaten into via the proposal to permit ESN gateway usage. This reinforces an approach of using 1915-1920MHz as a guardband.

Q5: Do you have any comments on our proposed authorisation approach for FRMCS?

We believe the proposal to be reasonable.

Q6. Do you have any views on our proposed non-technical conditions for the new FRMCS licence?

We believe that the proposals are proportionate, in particular that the usage be restricted to operational railway purposes, given this is the justification for dedicating sector-specific spectrum.

We note the licence commencement date of April 2029, which is in line with end of the notice period provided for revoking mobile licences for the frequencies. Technically it could have been possible to issue FRMCS licences prior to this date (as Ofcom often reminds licensees, no spectrum rights are exclusive), however we believe that Ofcom is correct to hold to the April 2029 date, giving adjacent public mobile networks at least some time to commence the exercise of ensuring that their mast antennas have sufficient selectivity. Should Ofcom move to issue licences any earlier, we believe that this would reinforce the need to put in place a coordination notice to protect incumbent users (see response to Q13)

Q7. Do you have any views on our proposed licensing process for the FRMCS licence?

The proposals appear reasonable.

Q8. Are you aware of any uses that can coexist with FRMCS without creating a risk of harmful interference? If so, please provide evidence.

We are unaware of any use cases and are sceptical that there could be any cases which would not risk harmful interference with FRMCS.

Q9. Do you agree with our proposed approach for authorising ESN gateways in1910–1915 MHz?

We believe the proposed approach acceptable, however query whether an alternative approach has been considered of licensing the spectrum to the Home Office (with the ESN provider then being their subcontractor hence the spectrum rights and obligations being contractually back-ended). Such an approach would negate the need for Ofcom to revoke the licence if the ESN contract is re-tendered and awarded to someone other than EE. It also permits operational flexibility should the Home Office ever seek to have multiple ESN Gateway providers. Further, as the ESN Gateways are likely to be mounted on emergency response vehicles, if the proposed non-technical licence terms involve a right for Ofcom to inspect the equipment, it is more likely that this will be facilitated by the emergency services themselves rather than EE (or the licensee at the time).

Q10. Do you have any views on our proposed non-technical licence terms for the ESN gateways licence?

The terms appear appropriate.

Q11. Do you have any views on our proposed licensing process for the ESN gateway licence?

Please see response to Q9.

Q12. Are you aware of any uses that can coexist with ESN Gateways without causing risk of harmful interference? If so, please provide evidence

We note that the scope of this question relates to coexistence of other use cases with ESN Gateways, when a more proper scope would have been coexistence both with ESN Gateways and adjacent spectrum users (FRMCS, public mobile). We are unaware of any proposed use cases, and do not believe that any such use would be feasible.

Q13. Do you have any comments on our assessment of the coexistence of FRMCS in 1900–1910 MHz with existing DECT services and FDD uplinks?

Whilst ECC report 318 provides a technical approach to coexistence via improved filtering in mobile networks, this overlooks the cost and practicalities of deploying such filters. We note that in the parallel situation of deploying public mobile networks in adjacent bands to incumbent GSM-R, Vodafone is required to comply with a coordination notice to protect GSM-R. It is thus unfair that once the boot is on the other

foot and mobile is the incumbent service and new rail systems are being deployed in adjacent frequencies, the burden of coexistence is still being laid on the incumbent mobile industry.

Since placing new applications immediately adjacent to mobile services would further increase that cost burden, we believe it is essential that a guardband is maintained in 1915-1920MHz. We also believe that Ofcom should put coordination requirements on FRMCS deployments so that incumbent mobile network operators are notified, and can request that FRMCS deployments either moderate power output levels, deploy additional filtering or utilise antenna downtilt (i.e. what Vodafone is expected to do in order to protect GSM-R in the reverse case). We are open to such a coordination approach being time-bound in line with equipment replacement cycles.

Q14. Do you have any comments on our assessment of the coexistence of ESN Gateways in 1910–1915 MHz with existing DECT and FDD uplinks?

We consider that Ofcom has erred in its reference that increased basestation selectivity/filtering will mitigate the risk of interference between ESN Gateways and public mobile services. Whereas for the FRMCS use case it is possible for mobile networks to deploy filters at specific known locations according to the proximity of railway usage, in principle ESN Gateways can be deployed anywhere – it would be unduly burdensome to upgrade every mast in the network on the off-chance that there is a nearby police incident. For this reason, we consider that mobile networks have little choice but to accept the possibility of service degradation when an ESN Gateway is deployed in the area. Therefore, it would be appropriate to develop a process such that when an ESN Gateway is activated, mobile network operation centres are automatically notified in order that there is at least awareness that there could be transient service degradation.

Q15. Do you have any comments on our assessment of the coexistence of ESN Gateways in 1910–1915MHz with FRMCS in 1900–1910 MHz?

Vodafone has no comments on the assessment.

Q16. Do you have any comments on the feasibility of the additional mitigation measures we have identified, or additional suggestions for measures that could further reduce the likelihood and/or impact of interference?

Vodafone has no comments on the assessment.

Q17. Do you have any comments on our proposed technical licence conditions for FRMCS and ESN gateways?

Please see response to Q13, outlining the need for a coordination notice with respect to FRMCS, and response to Q14 regarding notification when ESN Gateways are activated.

Q18. Do you agree with our provisional conclusion that there is likely to be excess demand for the 1900–1915 MHz band, in future, if cost-based fees were applied; and, therefore, that an AIP fee is appropriate?

We believe that the desire for access to the spectrum has been clearly articulated by alternative users to those selected by Ofcom – as such an AIP fee is appropriate.

Q19. Do you agree with our approach to fees, including fee level and adjustments? Please provide any evidence to support your position.

We note that as ever, deriving ALF proposals requires considerable regulatory judgement, hence is highly subjective.

Ofcom has missed one comparator, which would lead to a higher fee than proposed in the consultation. In the parallel exercise reviewing mobile spectrum ALFs, Ofcom has provisionally concluded that whereas 900MHz spectrum has an LSV of £17.2M/MHz, 2100MHz spectrum has an LSV of £12M/MHz (both these figures being subject to ongoing review). This implies that because of poorer propagation - hence need for a denser mast grid - 2100MHz spectrum is worth 69.7% of the value of 900MHz. Ofcom has examined benchmarks with considerable rigour in drawing these conclusions. The GSM-R band is immediately below the 900MHz mobile band, whereas the proposed FRMCS band is immediately below the 2100MHz mobile band – it therefore follows that there should be a similar value relationship between GSM-R and FRMCS spectrum. If Ofcom is confident that its ALF of £396k/MHz/yr fee is correct for GSM-R spectrum, then we see no reason why the FRMCS band should not be charged at £276k/MHz/yr, rather than the £150k/MHz/yr suggested in the consultation.

We believe that this pricing should also form the starting point for ESN Gateway usage. We are somewhat perplexed by the idea that the ESN Gateway licence fee should be reduced to reflect lower permitted power levels. Such an approach would be sensible for a fixed mast grid, reflective of the need to deploy more masts to achieve a given coverage level. However, the number of transmitters to be deployed as ESN Gateways is determined by the volume of suitable emergency service vehicles – it is unlikely that the equipment will be deployed in more vehicles to take account of lower transmit power levels, hence this needs to be taken account in valuing the spectrum. In any case, even if there were more equipped vehicles as a result, this is irrelevant because AIP should be driven by the value placed by the excluded user. We see no evidence in the analysis to suggest the hypothetical excluded user would have a lower value because of the lower transmit power, and as such, we do not believe that there should be any reduction to take account of this.

Returning to FRMCS, we note that the national ALF is then apportioned on a route-mile basis. We agree that there is probably no better approach that Ofcom could have taken without being overly-complex, however it does demonstrate how arbitrary the ALF model is - there is no evidence that the value of the spectrum is geographically uniform, but the proposed approach ascribes the same value for use of the spectrum on a mile of track in rural Scotland to that in the London suburbs, which is clearly incorrect. Rather than taking a uniform pricing approach, Ofcom might have considered at least adopting an "Area 1" (urban) / "Area 2" (rural) approach[1].

Vodafone UK
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[1] A similar demarcation could be used to that incorporated into the Network Commitment licence conditions that will apply to the merger of Vodafone and 3UK in defining these areas.