

Enabling mmWave Spectrum for new uses

Executive Summary

JRC and its Members welcome the opportunity to respond to this consultation and as critical system operators JRC Members depend on access to spectrum and as such are concerned with Ofcom's proposals to displace fixed links from the 26GHz band. The focus of JRC's response is summarised below;

- In light of Ofcom's approach to clear fixed links from the High-Density Areas (HDA) whilst allowing them to remain in the non-High-Density Areas and the intention to establish a technical co-existence regime to afford appropriate protection of fixed links in non-HDAs then we encourage Ofcom to revisit its decision to block changes to existing links and the deployment of new fixed links in non-HDAs;
- The Costing Model does not fully reflect the actual costs for the systems deployed by JRC's Members and we encourage Ofcom to revisit the underlying cost components and the scenario that should be applied;
- With regard to the establishment of a co-existence regime with fixed links JRC and its Members are keen to work with Ofcom to ensure that the technical coexistence arrangements established afford appropriate protection particularly in light of the suggestion to revisit the decision to block modifications to and new fixed links in the band.

To put the impact of these proposed changes in context, we encourage Ofcom to recognise the long term spectrum access needs of other platforms / systems, e.g. Energy Network Operators, PMSE, etc.. To this end we are very supportive of the work underway in Ofcom's 'Spectrum for Utilities' study and as such our perspective is aligned to the long term imperative of additional spectrum access for the Energy Network Operators to facilitate Government policy, i.e. the 'Net Zero' transition.

Background

Joint Radio Company Ltd (JRC) is a wholly owned joint venture between the UK electricity and gas industries specifically created to manage the radio spectrum allocations for these industries used to support operational, safety and emergency communications.

JRC manages blocks of VHF and UHF spectrum for Private Business Radio applications, telemetry & telecontrol services and network operations. JRC created and manages a national cellular plan for co-ordinating frequency assignments for several large radio networks in the UK.

The VHF and UHF frequency allocations managed by JRC support telecommunications networks to keep the electricity and gas industries in touch with their field engineers. These networks provide comprehensive geographical coverage to support installation, maintenance and repair of plant in all weather conditions on 24 hour/365 days per year basis.

JRC's Scanning Telemetry Service is used by radio based Supervisory Control And Data Acquisition (SCADA) networks which control and monitor safety critical gas and electricity industry plant and equipment throughout the country. These networks provide resilient and reliable communications at all times to unmanned sites and plant in remote locations to maintain the integrity of the UK's energy generation, transmission and distribution.

JRC supports the European Utility Telecommunications Council's Radio Spectrum Group, and participates in other global utility telecom organisations. JRC participates in European



Telecommunications Standards Institute (ETSI) working groups developing new radio standards, and European telecommunications regulatory groups and workshops.

JRC also manages microwave fixed link and satellite licences on behalf of the utility sector.

JRC works with the Energy Networks Association's Future Energy Networks Groups assessing ICT implications of Smart Networks, Smart Grids & Smart Meters and is an acknowledged knowledge source for cyber-security in respect of radio networks.

JRC's Detailed Response to Questions

Q 1. Do you have any comments on our assessment of potential use cases, demand and deployment strategies for new uses of mmWave spectrum?

JRC Response

Confidential? No.

JRC's Members depend on fixed links in the 26GHz band for the operational integrity of their networks and fundamental to the safe and secure supply of Electricity to UK consumers. Ofcom in seeking to enable access to the band for 5G services has sterilised the band for fixed links and is proposing to displace fixed links in and adjacent to High Density Areas. We encourage Ofcom to reconsider the importance of continued access to the band for fixed links, subject to establishing an appropriate co-existence regime to address the 'mission critical' operational needs of the Energy Network Operators, particularly in those non-HDA areas where demand for 5G service deployment is likely to be low and fixed links will be a relevant alternative use. Furthermore, the approach advised in the consultation is to enable co-existence between fixed links and 5G services in non-HDA areas if this is the intention then to maximise value Ofcom should seek to enable further fixed link access to the band in non HDA areas and modifications to links in non-HDA subject to confirmation of the co-existence regime which in the case of Energy Network Operators will need to assure the critical function that these links undertake. The above approach would support the policy objective of achieving efficient allocation of spectrum whilst also ensuring timely availability of spectrum. Independent of this change to Ofcom's proposals there is a likelihood that Ofcom will fail to deliver on its regulatory obligation because of the sterilisation of the band for the fixed link service in areas of the UK where Ofcom acknowledge that demand for 5G service deployment is likely to be easily served and relatively low.

Q 2. Do you have any comments on our proposed overall approach to mmWave spectrum (including our aim to make the 26 GHz and 40 GHz bands available for new uses on the same or similar timeframe)?

Q 2. JRC Response

Confidential? No.

For the 26GHz band it would appear to be disproportionate to block further fixed links deployments and changes to existing licensed links particularly for the non-HDA areas and we encourage Ofcom to move quickly to develop the co-existence regime that has been outlined to ensure that appropriate protection is afforded to existing fixed links operated by JRC Members for both the HDA and non-HDA areas assure the operational integrity of critical national infrastructure.

Q 3. Do you agree with our approach of specifying high and low density areas in the UK, and authorising new uses differently in those areas?

Q 3. JRC Response

Confidential? No.

Yes, in principle but as has been noted in response to Q1 and Q2 above there appears a risk of regulatory failure with the whole of the country being sterilised to new fixed links and changes to existing fixed links. Ofcom's approach to designate HDA and non-HDA areas is predicated on their expectation that it will be practical to continue to operate fixed links in the non-HDA areas. Furthermore, with the expectation that there will be relatively limited demand for 5G services in rural locations we would encourage Ofcom to revisit its decision to block new links and modifications to existing links in low density areas and open these areas for further fixed links. Such a modification is

consistent with the approach being considered in Question 11 where Ofcom are contemplating enabling future satellite earth stations access to low density areas.

Q 4. Do you agree with our overall authorisation approach in high density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis for the bottom 850 MHz of the 26 GHz band, (24.25-25.1 GHz), and to auction citywide licences for the rest of the 26 GHz band (25.1-27.5 GHz))?

Q 4. JRC Response

Confidential? No.

No Comment.

Q 5. Do you agree with our overall authorisation approach in low density areas for the 26 GHz band (i.e. to grant Shared Access licences on a first come, first served basis)?

Q 5. JRC Response

Confidential? No.

No comment.

Q 6. Do you agree with adopting a similar approach to authorising the 40 GHz band as our proposals for the 26 GHz band, if we were to decide to re-allocate the 40 GHz band?

Q 6. JRC Response

Confidential? No.

No Comment.

Q 7. Do you agree with our proposed methodology for identifying and defining high density areas?

Q 7. JRC Response

Confidential? No.

No, as it has the potential to overlook discrete locations such as hospitals and universities. There is also the potential for temporary high-profile, high-density deployments e.g. Reading & Leeds Festivals, F1 (Silverstone) and major golf competitions that fall outside the HDAs i.e. low density areas where 5G may be actively deployed on a time limited basis. In these scenarios we are keen to work with Ofcom to ensure that the incumbent fixed links which are critical to the operational integrity of the Energy Networks will be afforded appropriate protection.

Q 8. Do you agree with our proposed cut-off point of 40 high density areas?

Q 8. JRC Response

Confidential? No.

No, we believe that the relevant number of HDAs should be informed by the Mobile Network Operators' expectations for spectrum demand. However, independent of appropriate guidance from the market, i.e. the MNOs, and in recognition of the potential uncertainty of ongoing reliability with the potential risk of harm and cost of disruption to UK Energy Consumers we propose that the level be set at 80. In

addition, we encourage Ofcom to advise its approach to addressing links that are close to the HDA but not designated as impacted by the HDA which are subsequently compromised.

Q 9. Do you agree with our proposal to clear the fixed links in and around high density areas from the 26 GHz band?

Q 9. JRC Response

Confidential? No.

No Comment.

Q 10. Do you agree with our estimates of the cost of migrating fixed links into alternative spectrum bands?

Q 10. JRC Response

Confidential? No.

JRC notes Ofcom's approach to the costing analysis is aligned to the scale economies that are available to Mobile Network Operators (MNOs) when purchasing this type of equipment. As a result the cost base used for the analysis is set too low to reflect the actual costs incurred by other operators that do not have the benefit of such scale economies. In addition to the higher hardware and installation costs incurred by non-MNO fixed link operators it is also important to note that the configuration of the fixed link deployment is different in the case of critical infrastructure system operation, e.g. Energy Network Operation, with additional redundancy and the integration of back-up power necessary which adds additional costs to the system which is not considered in Ofcom's analysis.

In terms of the four scenarios developed by Ofcom and in light of the aspects noted above we believe that the scenario 'Higher ongoing costs, 15 year useful equipment lifetime' better reflects the reality from an Energy Network Operators. Furthermore, in the act of trying to estimate the costs of the revocation process it is inevitable that there will be cost inconsistencies across users. Perhaps the approach that Ofcom could adopt is to set a budget for the process in line with 'Higher ongoing costs, 15 years useful equipment lifetime' scenario and then compensate individual operators based on the actual costs incurred.

Q 11. Do you agree with the proposed approaches we have outlined to manage coexistence between new 5G users and the different existing users in the 26 GHz band? In particular, do you have any views on our proposals to limit future satellite earth stations in this band to low density areas only, and to end access to this band for PMSE users with five years' notice?

Q 11. JRC Response

Confidential? **Yes.**

The approach to manage co-existence at a high level has been advised but the detail that is critical to the actual co-existence is still to be defined and we are keen to work with Ofcom to ensure that the regime is appropriate to afford adequate protection to the fixed links of JRC's Members which are essential to the operational integrity of critical infrastructure, i.e. its Distribution Network. To this end we note the following in terms of Ofcom's approach to establishing the co-existence regime;

- Ofcom advise that their approach will be based on realistic expectations, of the likely operating parameters and use scenarios and we are keen to support Ofcom in the formulation of this.

Furthermore, as real applications become apparent, the assumptions and approach will need to be updated, especially where likely new user requirements increase.

- The modelling of the co-existence of new 26GHz services with existing services, in particular fixed links, needs to be fully defined and documented. Whilst Ofcom are primarily responsible for protecting the services of existing users, the method should be accessible, so that all parties are able to perform the necessary checks;
- Noting paragraph 5.77 establishment of the trigger threshold and detailed coordination procedure is key. Ofcom advise that full details will be available 'further down the line', via further consultations that will need to take account of technical characteristics, reuse distances, exclusion zones, fields strength limits and deployment density. However, we note that care should be exercised that trigger factors, based on a subset of these parameters, should not negate the need for detailed coordination;
- With a five-year notice period for those fixed link licences that will be revoked there will be a period of time, after the auction, where co-existence with the new 5G services will need to be co-ordinated and appropriate protection afforded to incumbent fixed links particularly where these are specific to the operational integrity of Energy Networks; and
- Ofcom advise in paragraph A6.44 that the resilience of typical fixed links is being investigated and we would welcome details of the tests and results obtained. Assumptions are made on 5G base station power control, power sharing and beam widths, the sensitivity to these assumptions should be clearly understood.

In light of Ofcom's proposal to limit future satellite earth stations to low density areas whilst we have no view on this proposal we encourage Ofcom to also reconsider permitting the future deployment and modification of fixed links in the low density areas in order to optimise spectrum utilisation – subject to appropriate co-existence arrangements being defined.

Q 12. Do you agree with the proposed approaches we have outlined to manage coexistence between new 5G users and the different existing users in the 26 GHz band? In particular, do you have any views on our proposals to limit future satellite earth stations in this band to low density areas only, and to end access to this band for PMSE users with five years' notice?

Q 12. JRC Response

Confidential? **Yes.**

No Comment.

Q 13. Do you agree with our analysis of the impact on existing 40 GHz licensees, including our estimates of the cost of moving fixed links under the options involving revocation (options 2, 3 and 4)?

Q 13. JRC Response

Confidential? No.

No Comment.

Q 14. Do you have any comments on our high-level Shared Access proposals (including technical and non-technical licence conditions and proposed approach to setting fees)?

Q 14. JRC Response

Confidential? No.

No specific comments other than noting the importance of the technical licence conditions being designed to afford appropriate protection to existing and potentially new fixed links in non-HDA areas subject to Ofcom changing its approach to fixed links to avoid a scenario where Ofcom could be perceived to fail in delivering on its obligations as a spectrum regulator.

Q 15. Do you agree with the overall approach we have set out to coordination and coexistence between new Shared Access users in the 26 GHz band and existing users?

Q 15. JRC Response

Confidential? No.

Based on the limited information provided it is difficult to respond, please refer to our response to Question 11, we look forward to the follow-on consultations in which Ofcom will set-out greater detail on the license conditions and we encourage Ofcom to ensure that they take into account the potential for the licensing of fixed links to be re-established in non-HDA areas whilst ensuring that appropriate protection is afforded to existing fixed links in both HDA and non-HDA areas.

Q 16. Do you have any comments on our initial thinking in relation to auction design?

Q 16. JRC Response

Confidential? No.

No Comment.

Q 17. Do you have any comments on the licence duration options we have considered in this section for new licences for the 26 GHz and 40 GHz bands that we would auction?

Q 17. JRC Response

Confidential? No.

No Comment.

Q 18. Do you agree with our assessment of potential competition concerns and that it may be appropriate to impose a competition measure such as a 'precautionary cap'?

Q 18. JRC Response

Confidential? No.

No Comment.