



Call for Inputs on 5G spectrum access at 26 GHz

Executive Summary

As critical systems users, the Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation on behalf of the electricity and gas utility operators.

JRC supports the actions of Ofcom in seeking to identify potential 5G scenarios and the need to understand any system sharing requirements before making long-term spectrum decisions specific to the 26GHz band.

Moreover, as it is unclear at this stage what form 5G services will take in the 26 GHz frequency range, we urge Ofcom to ensure on-going security of access to incumbent services on which the energy utility operators depend.

Potential 5G applications in the band may include backhaul and mobile services. In the case of backhaul this may be similar to existing fixed links services and may be readily accommodated alongside established fixed links within the band. The deployment of cellular type mobile communications within the band may be limited to localised base station to mobile devices in a 'hot-spot' type model and, as such, these systems are likely to be targeted to high footfall areas involving small cells embedded within the urban clutter. This may facilitate the opportunity for co-existence with incumbent uses such as fixed links.

In the event that Ofcom's / CEPT's appraisal of the technical characteristics of 5G result in the need for dedicated spectrum to be given over to the 5G service within the 26 GHz frequency range then JRC would encourage Ofcom to establish a progressive approach to spectrum release by initially focusing on the frequency block 26.5 to 27.5 GHz. Such an approach will enable up to 1 GHz of spectrum to be given over to 5G services, whilst also seeking to preserve established and incumbent services in the frequency block – most notably the spectrum used for fixed link services by the energy utility operators. In addition, by selecting the upper 1 GHz of spectrum for 5G services this would enhance the opportunity to establish a technical tuning range for devices that would be compatible with developments in North America and offering global harmonisation of devices which is compatible with the stated intent of industry and regulators.



The Joint Radio Company Ltd (JRC):

JRC Ltd 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 & tele-control services and network operations. JRC created and manages a national cellular plan for co-ordinating frequency assignments for a number of 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 throughout the country. These networks provide comprehensive geographical coverage to support the installation, maintenance and repair of plant in all weather conditions on a 24 hour/365 days per year basis.

JRC's Scanning Telemetry Service is used by radio based System 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 also manages microwave fixed link and satellite licences on behalf of the utility sector.

JRC supports the European Utility Telecommunications Council's (EUTC) 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 also European telecommunications regulatory groups and workshops.

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 responses to the Call for Input questions

Question 2.1: What are your planned timelines for commercial availability of network equipment and devices for the 26 GHz band? When will equipment for testing and trials be available? Please specify the specific mmWave tuning ranges supported and their timing.

No comment.

Question 2.2: Given the 3GPP studies into NR-based operations in licence-exempt spectrum, when (if ever) do you expect to support licence exempt operation and/or coordinated sharing in the 26 GHz band in your products?

No comment.

Question 2.3: When do you expect to support standalone New Radio in the 26 GHz band in your products?

No comment.

Question 3.1: Are there any other aspects related to the existing use of 26 GHz not covered in this CFI that you believe need to be considered?

No comment.

Question 3.2: What options for the existing services in the 26 GHz band do you believe need to be considered to allow for the introduction of new 5G services? Please give as detailed a response as possible along with all relevant information and explain how you would see any potential option you provide working in practice.

Fixed links are a key user of this band and a growing demand of approximately 500 additional new fixed links licensed in this band per year. JRC also notes from Ofcom's Spectrum Open Data¹ that there are approximately 5000 fixed links, contained within the reported 2800 licences, operating between 24.25 GHz and 26.5 GHz (174 of these links are managed by JRC). We encourage Ofcom to acknowledge the importance of this frequency range to the fixed service; with the energy utility operators, as incumbent users of the band, keen to ensure that their investment and on-going use of the band is afforded appropriate protection.

JRC supports Ofcom's intention to undertake sharing studies between existing users and potential 5G technologies. This is particularly important before making long-term spectrum decisions and, more critically, seeking to establish whether the characteristics of the 5G service warrant the displacement and clearance of incumbent users.

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¹ <http://static.ofcom.org.uk/static/spectrum/wireless-telegraphy-register/WTR%20Register%20Report%2010082017.csv>

mobile devices in a 'hot-spot' type model and as such these systems are likely to be targeted to high footfall areas involving small cells embedded within the urban clutter. This may also facilitate the opportunity for co-existence with incumbent uses such as fixed links.

In the event that Ofcom's / CEPT's appraisal of the technical characteristics of 5G result in the need for dedicated spectrum to be given over to the 5G service within the 26 GHz frequency range then JRC would encourage Ofcom to establish a progressive approach to spectrum release initially focusing on the frequency block 26.5 to 27.5 GHz. Such an approach will enable up to 1 GHz of spectrum to be given over to 5G services, whilst also seeking to preserve established and incumbent services in the frequency block – most notably the spectrum used for fixed link services by the energy utility operators. In addition, by selecting the upper 1 GHz of spectrum for 5G services this would enhance the opportunity to establish a technical tuning range for devices that would be compatible with developments in North America and offering global harmonisation of devices which is compatible with the stated intent of industry and regulators.

Question 3.3: Should a moratorium be placed on issuing new licences in the 26 GHz band for existing services? E.g. to ensure that the 26 GHz band is not unnecessarily encumbered prior to the development of a new authorisation / licensing approach for 5G services?

JRC considers it a little too early to establish a moratorium on the issuing of new licences for existing services in the 26 GHz band particularly as co-existence arrangements are still under consideration. However, in the event that Ofcom were to apply a moratorium² then JRC suggests that this should be limited to services operating above 26.5 GHz.

Question 4.1: What service would be delivered and to which consumers and/or organisations?

No comment.

Question 4.2: Where in the UK would the 26 GHz spectrum be used to deliver services? For example, will deployments be focussed on:

a) Areas of existing high mobile broadband demand?

No comment.

b) Rural areas?

No comment.

c) Rail and road corridors?

No comment.

d) Specific types of enterprise or industrial sites?

² Noting that the definition of a moratorium is a 'temporary prohibition of an activity' rather than its cessation.

No comment.

e) Indoors or outdoors?

No comment.

f) Specific nations or regions of the UK?

No comment.

Question 4.3: Where 5G cells are deployed, are they expected to be individual cells or as clusters of cells required to give wider areas of contiguous coverage? What would be the area of a typical contiguous coverage cell cluster?

No comment.

Question 4.4: What capacity and bandwidth (i.e. Channel Bandwidth in MHz) would be required at each cell to meet initial capacity requirements? How will this change over time?

No comment.

Question 4.5: What quality of service is required? How sensitive is the service being offered to variations in radio interference from other operator's 5G cells and other spectrum users?

No comment.

Question 4.6: Will end users be fixed or mobile?

No comment.

Question 4.7: What are the characteristics of 5G at 26 GHz which make this band particularly suited to the service you plan to deploy? What other spectrum bands could be used as an alternative, or in preference to, the 26 GHz band? To what extent could carrier aggregation and other techniques reduce your reliance on 26 GHz?

No comment.

Question 5.1: Should Ofcom consider licencing options other than the 3 examples set out above (licence exempt, shared co-ordinated and area defined) for the 26 GHz band? If so, what other options do you consider should be included?

No comment.

Question 5.2: What methodologies could be used to pre-define 'high demand areas' for area defined licences?

No comment.



Question 5.3: What mechanism could be used to co-ordinate cell deployments by different operators in shared spectrum?

No comment.

Question 5.4: What methodologies could be used for determining the proportion of spectrum to allocate using area defined licences and co-ordinated deployment?

JRC supports the proposed Hybrid Authorisation approach because that would enable the continued deployment of co-ordinated fixed links in the 26 GHz band.

Question 5.5: Do you agree that the 26 GHz band should be released progressively? What risks do you envisage with such an approach and how can these be best mitigated?

In the event that Ofcom's / CEPT's appraisal of the technical characteristics of 5G result in the need for dedicated spectrum to be given over to the 5G service within the 26 GHz frequency range then JRC would encourage Ofcom to establish a progressive approach to spectrum release initially focusing on the frequency block 26.5 to 27.5 GHz. Such an approach will enable up to 1 GHz of spectrum to be given over to 5G services, whilst also seeking to preserve established and incumbent services in the frequency block – most notably the spectrum used for fixed link services by the energy utility operators. This would also allow for 5G backhaul type solutions, compatible with existing fixed link users, to be accommodated below 26.5 GHz.