

RADIO SPECTRUM POLICY GROUP

STRATEGIC SPECTRUM ROADMAP TOWARDS 5G FOR EUROPE

DRAFT RSPG Second Opinion on 5G networks

Executive Summary

The Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation and in particular JRC supports the actions of the RSPG to encourage the development of appropriate coexistence arrangements to enable access to the bands under consideration whilst at the same time seeking to minimise the disruption to incumbent systems. In the case of the 26 GHz band we see the establishment of appropriate coexistence arrangements as key to maximising the utilisation of the frequency band and avoid the risk of regulatory failure.

Background

Joint Radio Company 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 & 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 Observations on the RSPG Second 5G Draft Opinion

Introduction

JRC welcomes the opportunity to provide input to the second 5G draft opinion and in particular the ongoing use of the spectrum in the 26 GHz band by fixed links. This band to date has been extensively

used by Communications Network Operators, both fixed and mobile, and also Enterprise users, e.g. Energy Utilities in the UK. Over recent years there has been a prioritisation for release of lower frequency, sub-6 GHz spectrum, to the Mobile Service and as such this has resulted in the displacement of fixed link requirements of the Energy Utilities to higher frequency bands, e.g. 26 GHz. However, with the identification of the 26 GHz band as a pioneer band for 5G in Europe it is important that sufficient protection is afforded to incumbent services, in particular existing fixed links that are a critical operational component of the Energy Utilities control systems.

1 GHz Initial Release of the 26 GHz Band

JRC are supportive of an approach which in the first instance seeks to make 1 GHz available to the market for 5G provided this is managed in such a way to avoid disruption to incumbent services – perhaps this approach would be optimised by seeking to make the 1 GHz available at the top of the frequency range to also maximise the tuning range with equipment being developed for the 28 GHz Band.

Anticipated Deployment Characteristics for 5G in 26 GHz

The RSPG note that the deployment of 5G systems at 26 GHz are;

*‘Likely to be areas of high demand, e.g. Transport Hubs, entertainment venues, etc.
‘because of its characteristics 26 GHz will not be used to create wide area coverage.’
Moreover, the RSPG note that 5G networks will not be homogeneous and the 26 GHz band will be utilised to provide ‘islands of very high capacity.’*

On this basis it seems unlikely that the 26 GHz band will be deployed beyond targeted locations requiring very high data throughput. Nevertheless, every effort should be made to ensure that in the event that 5G systems at 26 GHz are to be deployed in close proximity to Fixed Links in the band then appropriate coexistence arrangements should be established to mitigate the risk of interference to the Fixed Links whilst also seeking to maximise the utilisation of the band.

A 2.1.2 New ways of sharing

Technology developments in terms of beam forming capability will enable greater potential for band sharing and JRC welcome such technical enhancements being established within the 5G standard to mitigate the potential for interference to incumbent users from the deployment of 5G systems in the 26 GHz band.

A 2.1.3 Spectrum sharing with fixed service

We welcome the observation by the RSPG that;

‘With regard to the 26 GHz band (and similarly with other mmWave bands), large parts are currently used for wireless fixed links in European countries. Depending on the location of the fixed links, the demand for 5G small cells and the extent to which interference can be mitigated using new technologies, it may be possible to deploy 5G small cells within the same frequency range as some of the existing fixed links.’

To this end, inputs have been made to the CEPT process to establish the appropriate technical characteristics for 5G to coexist with the Fixed Service in the 26 GHz band. In addition, an ECC document¹ is being prepared to define the approach to sharing within the band.

However, in the event that co-existence issues can not be resolved in specific geographic locations we encourage an approach that in the first instance seeks to limit the frequency block given over to the 5G service to the top 1 GHz range of the 26 GHz band so that the fixed links could be accommodated in the lower part of the band. In the event that in due course additional spectrum were to be given over to the 5G service with a resulting displacement of the fixed service we welcome the proposal by the RSPG to adopt a progressive approach to any subsequent clearance and where appropriate funding arrangements should be established to facilitate the displacement of the fixed service and compensate for any sunk capital investment remaining. Nevertheless, it is anticipated that any need for displacement should be by exception.

A2.1.4 Sharing with other co-primary services

b) Sharing with other primary services at 26 GHz

We welcome the position adopted in the first RSPG opinion on 5G, that;

‘the harmonisation of the 26 GHz band for 5G will need to take into account other services in the same band or in the adjacent bands.’

As such we are encouraged by the work underway within CEPT and ETSI to establish the appropriate coexistence arrangements and technical standards to ensure that the future use of the 26 GHz band is optimised for all users.

A 2.3 Considerations of the relevance of 5G to IoT, ITS and verticals

The RSPG’s assertion in A 2.3 that demand for business-specific applications could largely be covered by mobile providers in future has not been substantiated. In particular the Energy Utilities utilise control systems in their networks that require ultralow latency and high resilience and to date the mobile networks have been unable to service these operational requirements and hence bespoke solutions have been deployed and operated independent of the mobile networks. Whilst, there are expectations that 5G systems may have operating characteristics compatible with those demanded by Energy Utilities this is still unproven. Moreover, the increased risk of cyber-attack to enterprise system enabled by public mobile networks is also a key concern to be addressed and as such we would encourage the RSPG to reserve judgement on the future characteristics of market supply until there is greater understanding of the above matters and mobile operator capabilities.

A4.2.2 Policy / regulatory issues & spectrum management aspects relating to second stage/long term 5G mm-wave frequency bands.

We are encouraged by RSPG’s acknowledgement that the new regulatory framework that will be established to provide a flexible and predictable environment for 5G short-term and long-term development will be subject to ensuring harmonious co-existence of all primary services. To this end we welcome the activities underway within CEPT and ETSI to establish the appropriate technical

¹ ECC Decision (18)xx DRAFT ‘Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 24.25-27.50 GHz ‘



coexistence arrangements to establish appropriate interference mitigation arrangements for incumbent users, e.g. Fixed Links, in the 26 GHz band.

Conclusion

JRC welcomes the RSPG's intention to ensure appropriate protection is afforded to the incumbent services when the technical characteristics of the 5G service are established for the '5G Pioneer Bands'. In addition, we are supportive of the adoption of regulatory provisions designed to facilitate the coexistence of 5G services alongside incumbent services in the bands which will be key to maximising the utilisation of the bands over the long term.