Ofcom Consultation

Fixed Wireless Spectrum Strategy
Proposed next steps to enable future uses of fixed wireless links

Executive Summary

The Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation.

JRC welcomes Ofcom's understanding that *'Energy distribution along with all the necessary communications and network management, monitoring and control functions all require high reliability communications infrastructures. A change to a more distributed model could result in additional requirements for fixed wireless links, which we [Ofcom] will monitor'*.

JRC also welcomes Ofcom's recognition that access to suitable spectrum enables *'the safe and secure supply of water, **electricity** and **gas** in the UK'*.

JRC highlights that a wide range of channel widths and data rates will continue to be required when the existing electricity grid monitoring and control systems, with their range of technologies, are expanded to the edges of the electricity Smart Grid network, e.g. with 100 times more locations being monitored.

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 & tele-control 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 Ofcom's Fixed Wireless Spectrum Strategy

The Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation.

JRC welcomes Ofcom's understanding that *'Energy distribution along with all the necessary communications and network management, monitoring and control functions all require high reliability communications infrastructures. A change to a more distributed model could result in additional requirements for fixed wireless links, which we [Ofcom] will monitor'*.

JRC also welcomes Ofcom's recognition that access to suitable spectrum enables *'the safe and secure supply of water, **electricity** and **gas** in the UK'*.JRC is pleased that Ofcom will be working towards ensuring timely availability of the right mix of spectrum for the fixed wireless sector and with the right authorisation approach to meet future requirements.

JRC highlights that a wide range of channel widths and data rates will continue to be required when the existing electricity grid monitoring and control systems, with their range of technologies, are expanded to the edges of the electricity Smart Grid network, e.g. with 100 times more locations being monitored. Also, increased network capacity may be required for a range of applications including fixed infrastructure security monitoring.

JRC supports the use of the 1350 to 1375 MHz band for low capacity TDD fixed point-to-point and point-to-multipoint wireless link applications. This band will be particularly useful in the event that Ofcom were to clear the existing fixed links used for electricity grid control systems out of the 1492 to 1518 MHz band. .

JRC also supports the use of the 6 GHz Band as an additional option for low capacity links.

JRC notes Ofcom's proposals for the 26 GHz Band and wishes to emphasise the impact this will have on Electricity Network Operators. In particular, this has the potential to result in an early forced migration of links utilised by four of the electricity distribution network operators (DNO).

With access to less than 2 MHz of assigned spectrum, within the 457.5 to 464 MHz Band, the electricity and gas utilities will continue to rely on access to Ofcom managed bands. We support Ofcom in their on-going activities with the MoD as part of the Public Sector Spectrum Release Programme (PSSRP) to make additional spectrum available in particular in the range 406.1 – 430 MHz.

JRC highlights that fixed links may be used in addition to fibre links where link diversity and redundancy are required. Utilities value the range and diversity of the fixed link bands available and use a combination of frequency bands, usually below 38 GHz, to provide long-range links with availabilities of up to 99.999%. This differs from the requirements of fixed wireless access and public mobile operators.

JRC welcomes Ofcom's intention to ensuring timely availability of the right mix of spectrum for the fixed wireless sector and with the right authorisation approach to meet future requirements.

Consultation questions

Question 1:

Response

No Comment.

Question 2:
Do you agree with our conclusions on spectrum implications and our proposed strategy/next steps for each band?
Are there any other considerations of significance that you feel we should have included or do you have other comments to make/points to raise with us on these issues?
Please provide as much detail as possible to support your answer.

Response

JRC acknowledges that a range of technologies are likely to be used to meet Smart Grid requirements. These technologies will range from low data rate 12.5 / 25 kHz narrow band systems to medium data rate wideband systems to high data rate broadband systems. JRC therefore supports the proposed access to the 1350 MHz Band and the 6 GHz Band for narrow band / low data rate point-to-point and point-to-multipoint *systems.*

JRC notes Ofcom's proposals for the 26 GHz Band and emphasises that if the band were given over to the Mobile service in its entirety without ongoing access to the fixed service then this would result in a forced migration of links utilised by four electricity distribution network operators (DNO). We encourage Ofcom to seek to adopt an approach that facilitates co-existence of 5G with incumbent users with perhaps only a proportion (1 MHz) of the band given over to 5G, this would be consistent with the approach being proposed by the RSPG[1]

Question 3:
Do you agree with the items we've identified for further consideration? Are there any other significant areas that you believe should be included? If so, please include all necessary evidence to support your view.

Response

JRC agrees with Ofcom's perspective that 'Energy distribution along with all the necessary communications and network management, monitoring and control functions all require high reliability communications infrastructures. A change to a more distributed model could result in additional requirements for fixed wireless links, which we [Ofcom] will monitor'. Furthermore, JRC advises that the current resilient monitoring and control systems will need access to additional spectrum to support both an increase in the number of active components being monitored and

[1] Public consultation on Strategic spectrum roadmap towards 5G for Europe – 2nd Draft RSPG Opinion on 5G networks, 23 November 2017. https://circabc.europa.eu/d/a/workspace/SpacesStore/fdf96fcf-16c5-4492-babd-a92eabecdef4/RSPG17-034final_2nd_draft_opinion_on_5G.pdf

controlled and a geographic expansion of the active components to encompass the Medium and Low Voltage layers of the energy networks.

Questions 4, 5, 6:

Response

No Comment.

Question 7:
Do you agree that there is a continued need for future low capacity fixed link applications?
If so, please provide information to support your view and what alternatives you would consider appropriate should the upper 1.4 GHz band no longer be available.
Please provide clear evidence to support the reasons for your views.

Response

JRC notes that a range of technologies and systems are likely to be used to meet future Smart Grid requirements and suitable spectrum needs to remain available. JRC therefore agrees with the proposed access to the 1350 MHz Band and 6 GHz Band for narrow band / low data rate systems.

JRC notes that utilities currently have approximately 300 1400 MHz FDD links. If necessary, and available, it is expected that these links would migrate to 1350 MHz TDD systems.

In addition, JRC notes that it is anticipated that the 1400 / 1350 MHz Bands will be used extensively with the planned geographic expansion of the monitoring and control components to encompass the Medium and Low Voltage layers of the energy networks. This may include a 100 times increase in channel access requirements across bands offering low data rate channels.

Questions 8, 9, 10, 11:

Response

No Comment.

Conclusions

JRC notes that a wide range of channel widths and data rates will continue to be required when the existing electricity grid monitoring and control systems, with their range of technologies, are expanded to the edges of the electricity Smart Grid network, e.g. with 100 times more locations being monitored.

JRC supports the use of the 1350 to 1375 MHz band for low capacity TDD fixed point-to-point and point-to-multipoint link applications.

JRC also supports the use of the 6 GHz Band as an additional option for low capacity links.

JRC acknowledges Ofcom's proposals for the 26 GHz Band and wishes to emphasise the impact this will have on Electricity Network Operators. In particular, this has the potential to result in an early forced migration of links utilised by four of the electricity distribution network operators (DNO).

With access to less than 2 MHz of assigned spectrum, within the 457.5 to 464 MHz Band, the electricity and gas utilities will continue to rely on access to Ofcom managed bands. We support Ofcom in their on-going activities with the MoD as part of the Public Sector Spectrum Release Programme (PSSRP) to make additional spectrum available in particular in the range 406.1 – 430 MHz.