

Further Consultation on the Release of the 410 – 415.5 / 420 – 425.5 MHz Sub-band

Executive Summary

The Joint Radio Company (JRC) welcomes the opportunity to respond to this consultation. JRC supports the actions of the Commission for Communications Regulation (ComReg) for the proposed release of the radio spectrum noted and in particular the recommendation to assign 2 x 3 MHz of the band on a service specific basis to enable ‘Smart Grid’ activities in Ireland.

JRC encourage ComReg to adopt an open approach to the operating mode that can be used and in so doing permit both TDD and FDD to be deployed in the band and in so doing allow the entity that wins the spectrum to deploy it in whichever mode best serves their operational requirements.

Whilst we welcome a minimum licence term of 15 years we advise ComReg to consider a term of 25 years to better align the spectrum access rights to the utility asset life and the time-frames that will be associated with the roll-out and utilisation of Smart Grid capability by Irish utilities.

The roll-out obligations proposed for the Part A lot require further consideration as they appear to be reflective of a typical mobile network roll-out where coverage drives revenue. The drivers behind the deployment of Smart Grid capability will be to establish enhanced asset utilisation, minimise customer outages, allow distributed generation to be connected quicker and increase availability – these are not revenue generating activities but rather act to reduce costs and environmental impact over the long term and hence a traditional roll-out obligation as suggested does not align well to the characteristics of use and outcomes being sought. Moreover, the complexity of funding associated with enterprises subject to price regulation as well as the practicalities of network roll-out considering the typical timescales for planning consent, infrastructure deployment and commissioning, plus time required to follow official procurement procedures (OJEC) all make the proposed obligation unrealistic. Perhaps a more nuanced approach to roll-out obligations which focuses on outcomes and which is developed in partnership with the Energy sector regulators may be more appropriate. This approach could be aligned to the requirements of reducing CO₂ emissions, increasing network efficiency, reducing customer outages and enhancing the utilisation of renewables amongst other criteria which will be enabled as a result of the Smart Grid deployment.

Overall, we commend ComReg for its visionary approach to spectrum access as set-out in this consultation and welcome the opportunity to support ComReg and the Irish utilities in the realisation of the Smart Grid capability envisaged in this approach.

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 detailed response

JRC observes the following in response to the detailed proposals put forward by ComReg;

3 Draft Assignment RIA

JRC Response

JRC wholly support the analysis undertaken by ComReg with the assistance of its third-party advisors that has resulted in the acknowledgement by ComReg that 2 x 3 MHz of spectrum need be made available for Smart Grid deployment in Ireland. We also endorse Option 3 as the approach by which a minimum of 2 x 3 MHz of the spectrum will be made available to the utility operators in Ireland for Smart Grid capability.

4 Award Mechanism and Fee Structure

JRC Response

JRC welcome the proposed award sequencing whereby the Part A lot will be auctioned first followed by the Part B lot. In terms of the auction design we support the Simple Clock Auction format as it minimises complexity for the award. The proposed Minimum Fee structure appears proportionate to the use type and the charging structure, i.e. upfront + annual thereafter, is an economically rational approach to levying the fees on industry. The proposal to not impose a competition cap is also proportionate and to be welcomed.

If there were to be any unsold spectrum specific to the Part B lot auction then perhaps there would be merit in locating this adjacent to the Part A Smart Grid spectrum to offer the potential for this to be used for Smart Grid purposes.

5.2 National Licences

JRC Response

JRC endorse the proposal that licences for the 400 MHz band should be awarded on a national basis as the opportunity to co-ordinate and deploy National networks is key to being able to cost effectively and efficiently enable Smart Grid developments in Ireland.

5.3 Channel Bandwidth

JRC Response

JRC supports ComReg's approach to not define the channel bandwidth and in so doing allow interested parties to aggregate spectrum to support their individual system needs.

With regard to the Block Edge Mask (BEM) proposals we note the observation by Plum that;

'there will be little interference between LTE and Private Business Radio (in this case Trunked Systems) if: (i) the normal out-of band emission masks are used for LTE;'

This being the case we are concerned that tighter BEMs are being proposed which will likely result in higher equipment costs as a consequence of more stringent filtering, etc., and have a negative impact on equipment availability. If the established BEMs are 'fit for purpose' we see no reason to impose more restrictive technical characteristics on the 'Smart Grid' network that will likely result in higher network costs.

5.4 Licence Duration

JRC Response

JRC notes the need for certainty in terms of spectrum access to allow the Irish utility network operators the time to design, deploy and realise the benefits of Smart Grid functionality. To this end we welcome a minimum 15 year term as recommended by Plum but also encourage ComReg to consider a 25 year term this would align better to the operational life of the utility assets, take account of the regulatory funding cycle (as noted against the roll-out obligations), the need for official procurement processes to be followed (OJEC) and the long term planning horizons adopted by utility network operators.

5.5 Mode of Operation

JRC Response

JRC is concerned that to restrict this spectrum to FDD only use at this stage would potentially foreclose on flexibility of use for the band and prevent the industry from being able to exploit future technology developments and more importantly be in conflict with the characteristics of the traffic in the band.

In terms of technology developments, it is too early in the establishment of 'Smart Grid' capability to limit the functionality of the radio-based communications systems on which it will depend. Recently, Western Power Distribution have successfully undertaken a trial utilising a TDD based system in the 400 MHz band (within the frequency range being considered by ComReg) which demonstrates that TDD based solutions are being developed.

Moreover, Smart Grid traffic profiles are likely to be asymmetric with higher flows of data from the network assets to the centre than the other way around. To this end, with an FDD configuration the 'uplink' channels have the potential to be heavily loaded as they carry data from the network assets to the centre whilst the 'downlink' channels will be lightly loaded carrying commands from the centre to the network assets. As the functionality within the 'Smart Grid' network becomes enhanced over time there is a risk that the uplink channels will become overloaded resulting in a need to re-design / deploy the radio network on which the 'Smart Grid' functionality depends at considerable cost and disruption.

JRC therefore encourage ComReg to adopt an open approach to the operating mode that can be used and in so doing permit both TDD and FDD to be deployed in the band and in so doing allow the entity that wins the spectrum to deploy it in whichever mode best serves their operational requirements.

5.6 Interference Mitigation

JRC Response

As noted above we are concerned that tighter BEMs are being proposed than are necessary and will result in an unnecessary burden on Smart Grid developments in Ireland. If the established BEMs are 'fit for purpose' we see no reason to impose more restrictive technical characteristics on the 'Smart Grid'

network that will likely result in higher network costs and may have implications on equipment availability.

Protection of Radio Astronomy

JRC Response

JRC acknowledges that ComReg will attach a licence condition to the band to require the licensee to co-ordinate with any potential future Radio Astronomy user and we support this approach.

EIRP Limit

JRC Response

JRC endorses the maximum EIRP of 50W for the band as proposed and acknowledges that this is an upper limit and that the minimum EIRP to maintain the network shall be established and deployed in order to minimise interference into adjacent licensees, across border and to any future Radio Astronomy service.

5.7 Roll out obligations / usage conditions

JRC Response

Part A

In terms of the Part A spectrum whilst we welcome the commitment of this spectrum for Smart Grid developments in Ireland it is also important to acknowledge the practicalities as well as the economics behind the roll-out of such radio network capability. As a matter of priority the appropriate funding needs to be put in place in order to facilitate this type of network deployment. The utilities to which this spectrum will be assigned will need to secure the appropriate funding through their regulatory settlements in order to facilitate roll-out. The cycle of these funding rounds are likely to vary across sectors and at this stage in the process the necessary funding arrangements are not in place to pay for the roll-out. To this end, we encourage ComReg to liaise with the relevant Government Departments and Regulatory authorities to determine at what point the necessary funding will be in place to support such a roll-out. Once the timescales for funding are understood it is then worthwhile to consider the practicalities of network roll-out considering the typical timescales for planning consent, infrastructure deployment and commissioning, time required to follow official procurement procedures (OJEC) to further elaborate the appropriate timings for any roll-out obligations. Moreover, the drivers behind the deployment of Smart Grid capability will be to establish enhanced asset utilisation, minimise customer outages, improve power quality, allow distributed generation to be connected quicker and increase availability – these are not revenue generating activities but rather act to reduce costs and environmental impact over the long term and hence a traditional roll-out obligation as suggested does not align well to the characteristics of use and outcomes being sought.

Finally, in terms of the active Smart Grid that is deployed there may be considerable variances between the needs of the Electricity sector relative to those of the Gas sector and as such 50% of the utility network being covered may vary dramatically dependent on the ‘actor’ involved. Perhaps it will be possible to establish a more nuanced approach to roll-out obligations which focuses on outcomes and which is developed in partnership with the Energy sector regulators. This approach could be aligned to the requirements of reducing CO2 emissions, increasing network efficiency and enhancing the

utilisation of renewables amongst other criteria which will be enabled as a result of the Smart Grid deployment.

Part B

Relative to the Part A roll-out obligations those being proposed for Part B appear less onerous and hence easier to achieve. As per comments above we see merit in aligning roll-out obligations to specific outcomes in terms of the services that may be delivered rather than some arbitrary level of infrastructure deployment.

Measurement of Roll out obligation

JRC Response

Whilst we have no specific issues about the monitoring and reporting of network roll-out per-se we do have concerns with the appropriateness of the timescales being considered for Part A spectrum. As noted above we encourage the adoption of outcome-based roll-out obligations and hence suggest that the reporting framework should be aligned to the benefits that will be realised through the establishment of Smart Grid capability.

5.8 Memorandum of Understanding

JRC Response

We support ComReg's intention to re-visit the MoU with the UK to address any issues associated with the deployment of wideband technologies in the band under consideration. The extent to which this engagement will be straightforward is unclear at this stage so we encourage early engagement to ensure that the spectrum can be utilised in Ireland as early as possible after the award.

5.9 Third Party Use

JRC Response

JRC supports ComReg's proposal to allow third party use in Part B of the band in keeping with the existing arrangements for Third Party Business Radio.

5.10 Compliance with the RED Directive

JRC Response

JRC supports ComReg's position that all radio and telecommunications equipment must comply with the RED Directive.

5.11 Summary of Proposals

ComReg Proposal	JRC Response
Option 3: Limit some rights of use (2 x 3 MHz) for the provision of Smart Grid and the remainder (2 x 2.5 MHz) on a service and technology neutral basis.	<i>JRC wholly support the analysis undertaken by ComReg with the assistance of its third party advisors that has resulted in the acknowledgement by ComReg that 2 x 3 MHz of spectrum need be made available for Smart Grid deployment in Ireland. We also endorse Option 3 as the approach by which a minimum of 2 x 3 MHz of the spectrum will be made available to the utility operators in Ireland for Smart Grid capability.</i>
Part A of the spectrum would be technology neutral but service specific and restricted for use of Smart Grids as defined in para 3.22 of this document. Part B, the remaining 2 x 2.5 MHz would be awarded in a manner which respects the principles of service and technology neutrality	<i>JRC welcomes ComReg's proposal to offer the Part A spectrum on a service specific basis for Smart Grid deployments. We also welcome the release of the Part B spectrum on a service and technology neutral basis.</i>
To make 400 MHz spectrum available on a national basis	<i>JRC support the release of the 400 MHz spectrum on a national basis</i>
No restriction on bandwidth, but to allow licensees to use spectrum rights of use with whatever bandwidth they wish, provided that potential licensees operate within their spectrum holdings and comply with the Proposed BEMs discussed in section 5.6 and specified in Annex 2	<i>JRC support the proposed flexibility of bandwidth subject to the limitations of spectrum held. However, we are concerned that tighter BEMs are being proposed than are necessary and will result in an unnecessary burden on Smart Grid developments in Ireland. If the established BEMs for LTE systems are 'fit for purpose' we see no reason to impose more restrictive technical characteristics on the 'Smart Grid' network that will likely result in higher network costs and may have implications on equipment availability.</i>
A licence duration of 15 years	<i>We welcome a minimum licence term of 15 years but also encourage ComReg to consider a 25-year term to afford the energy utilities sufficient time to deploy and exploit the Smart Grid capability.</i>
To make the spectrum available for FDD operation only	<i>JRC encourages ComReg to adopt an approach that does not limit the band to one mode of operation to avoid foreclosing on technology developments. Moreover, it is important to recognise the asymmetric nature of the traffic and the resulting inefficiencies that would result if the Smart Grid network were limited to the FDD mode of operation. JRC therefore encourage ComReg to adopt an open approach to the operating mode that can be used and in so doing permit both TDD and FDD to be deployed in the band and in so doing allow the entity that wins the spectrum to deploy it in whichever mode best serves their operational requirements.</i>

<p>A Block Edge Mask (“BEM”) which licensees must conform to</p>	<p><i>JRC are concerned that tighter BEMs are being proposed than are necessary and will result in an unnecessary burden on Smart Grid developments in Ireland. If the established BEMs for LTE systems are ‘fit for purpose’ we see no reason to impose more restrictive technical characteristics on the ‘Smart Grid’ network that will likely result in higher network costs and may have implications on equipment availability.</i></p>
<p>ComReg’s further proposal on allowing potential Third Party Use in the band is that the proposed scheme is likely to mirror the Third Party Business Radio licensing scheme</p>	<p><i>JRC supports this proposal for Third Party access.</i></p>
<p>Part B would be made available in lots of 2 × 100 kHz. To clarify, this represents the smallest building block that potential users may use to aggregate spectrum into larger amounts</p>	<p><i>We support the proposal for lot sizes of 2 x 100 kHz for the Part B release.</i></p>
<p>Roll-out Obligations for Part A, a roll-out obligation for a Network Utility Operator to provide communications to 50% of its utility network within 3 years of the commencement date of the licence</p>	<p><i>Roll-out obligations are appropriate for mobile networks to enhance customer service, but less appropriate for fixed networks where the location of the assets is known and they do not move.</i></p> <p><i>Furthermore, in light of the complexity of funding associated with enterprises subject to price regulation. In addition to the inherent timing issues associated with network roll-out at scale, e.g. planning consent, infrastructure build and commissioning we suggest that the proposed roll-out obligations are likely to be unachievable. Rather we encourage ComReg to consider an outcome-based approach which could be developed in conjunction with the utilities to target the specific timing of Smart Grid capability that will be naturally aligned to regulatory objectives.</i></p>
<p>For Part B of the spectrum, ComReg considers a reasonable roll-out obligation of no less than 10 base stations in each of the three areas as defined in section 5.7 by year 3. This obligation will be assessed after 3 years.</p>	<p><i>As per comments above we see merit in aligning roll-out obligations to specific outcomes in terms of the services that may be delivered rather than some arbitrary level of infrastructure deployment.</i></p>
<p>ComReg is of the view that a SCA is the auction format best suited to deal with the considerations outlined in the DotEcon Report.</p>	<p><i>JRC endorses the proposed SCA auction format for the award.</i></p>
<p>ComReg is of the preliminary view that lots in Part A should be made available on a frequency specific basis (that is, 410 – 413 MHz / 420 – 423 MHz) and Part B should be made available on a frequency generic basis</p>	<p><i>JRC supports the proposed lot arrangements</i></p>
<p>ComReg is of the preliminary view that a competition cap is not appropriate for this award process.</p>	<p><i>We agree with ComReg’s proposal that a competition cap is not appropriate.</i></p>

Any spectrum not taken up in the Part A auction will be included as part of the award for the remaining Part B.	<i>We support this approach.</i>
The fee proposals	<i>JRC welcomes the fee proposals for Part A and Part B spectrum and the establishment of the upfront and annual charging mechanism.</i>

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