

Ericsson views and comments on the draft Radio Spectrum Policy Group (RSPG) opinion on strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband

Ericsson is pleased to be provided with the opportunity to respond to the RSPG consultation on the ***draft opinion on strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband***. Ericsson is well aware of the restrained (flat) market developments within the common European Union market; thereof, this together other opinions could with anticipation result to a possible inspiration for the revival of a more appropriate regulatory framework for mobile broadband technologies, services and applications which eventually be placing the European Union Member States in a more favorable position in the global perspective.

Detailed views and comments

The frequency range 470 – 790 MHz

Ericsson is of the view that there is a need to consider the whole radio frequency range 470 – 790 MHz, while taking due account of the need to develop spectrum management practices with the aim of catering for the long-term goals to include all Europeans in the networked society by providing ubiquitous internet, and information services as well as multimedia based broadband services.

In our view this range could be divided in two bands; the band 600 MHz and the band 700 MHz, where the lower edge of the band 600 MHz starts at the frequency 470 MHz and the upper edge of the band 700 MHz ends at the frequency 790 MHz. The frequency dividing these two bands needs to be refined and is also determined by the possible use of broadband public protection and disaster relief use in the band 700 MHz.

With regard to the band 600 MHz, further considerations are therefore needed of additional studies on the future of TV services, consumer behaviors, and mobile broadband using the global LTE and HSPA standards, with the view of addressing the possibility for a converging, and collaborative multimedia and TV landscape for networks, services and applications. Policy makers are invited to particularly consider this range of spectrum, which should be made available for mobile broadband and multimedia services in a timely, but perhaps in phased manner, while considering different circumstances in the Member States. With such gradually convergence and collaborative approach, the industry and policy makers could jointly be addressing these opportunities to also provide for needs in all Europe.

Regarding possible LTE and HSPA use in the new band 700 MHz in Europe, Ericsson is favoring a frequency arrangement that would facilitate a globally harmonized solution, leveraging on already existing specification for Band 28 (B28) from 3GPP. This arrangement is originating from the organization Asia-Pacific Telecommunity (APT), which in addition to use in Europe, could provide for near global roaming, subject to regulatory implementations in countries around the world.

LTE and HSPA use in this range would provide high probability of satisfying the requirements of the European Digital Agenda targets, including the needs for access to advanced services also in the more sparsely populated regions in Europe. In addition, an important aspect for mobile broadband is the public protection and disaster relief (BB PPDR) application, the requirements have been studied

in detail in CEPT ECC WG FM PT49, and subsequently the solutions for BB PPDR services are now studied based on these requirements. In our view, the obvious candidate range of spectrum for BB PPDR applications and services is the band 700 MHz, which would satisfy the intention of the Article 8.3 of the RSPP. It would also be important to inform the International Telecommunication Union (ITU) on any developments in Europe with regard to BB PPDR for the possible inclusion in the ITU Resolution 646 (Rev.WRC-12) in relation to the ITU WRC-15 agenda item 1.3.

However, it is essential that the regulatory conditions are the same in a global perspective, policy makers are invited not to introduce special technical limits for Europe with an aim to allow for the cost benefit from the scale of economy to be passed on to consumers while applying equal rules cross regions of the world.

The frequency ranges around the frequency 1.5 GHz

Ericsson supports an early decision in CEPT by year 2013, on pan-European harmonization of the band 1452 – 1492 MHz (1.4 GHz) for mobile broadband Supplemental Downlink (SDL) using the LTE or HSPA global standards. Ericsson has already, together with partnering companies, demonstrated and also been trialing this band for the use of SDL applications providing additional capacity to an anchor band in a different band. Ericsson is of the view that the use of the band 1.4 GHz will provide a solution for less populated areas to limit the digital divide between regions in Europe. In urban and metro areas the access to the wider channels up to 20 MHz will give these areas an advantage whereas the less populated areas would have stay with a channel bandwidth of 10 MHz provided in the band 800 MHz. However, and if combining the band 800 MHz as the anchor band with the supplemental band 1.4 GHz, while also allowing higher RF transmit power in the band 1.4 GHz as it is a downlink only band, the correlated overlay between the bands 800 MHz and 1.4 GHz would provide the full broadband experience also in less populated areas and by this closing the digital divide.

In addition, Ericsson invites all European policy makers to initiate a process to make the adjacent sub-bands to the band 1452 – 1492 MHz, in the frequency range 1350 – 1400 MHz, 1427 – 1452 MHz and 1492 – 1517 MHz, available for mobile broadband use in the longer-term. Such initiative should also be brought to the attention of ITU WRC-15.

The frequency band 2300 – 2400 MHz

This band is identified to IMT in the ITU radio regulations, but still not implemented in all countries. Ericsson is currently providing commercial LTE equipment to service providers around the world in the globally harmonized band 2300 – 2400 MHz (B40 in 3GPP) using the LTE technology.

Ericsson does not understand the draft opinion when it is stated that the band is “harmonized” within CEPT for aeronautical telemetry, this text could therefore benefit from being subject to further review. However, it is understood that the band is in some few countries is “used” for aeronautical telemetry. Ericsson is of the understanding that the use cross Europe is somewhat fragmented in this band. In some countries the aeronautical telemetry is used just below the frequency 2300 MHz.

Generally, Ericsson is in favor of repurposing and designating this spectrum band for licensed mass-market mobile broadband use, using the international LTE standard. Countries, both inside and

outside of Europe, are already using LTE in this band for mobile broadband services and applications. With the outstandingly positive experiences of licensing regimes in bands for mass-market mobile broadband services and applications in other band Ericsson supports a licensing regime also for this band.

However, considering the fragmented circumstances, in comparisons between the European Union Member States, on the use in this band, other viable spectrum licensing regimes could be considered as to more easily get access to the band in under-used parts. Therefore Ericsson wishes to suggest including the use of Licensed Shared Access (LSA). The implementation of the LSA regime would be suitable in this band in countries where possibilities of vacating the band from incumbent use are unreasonable or cannot be managed within an acceptable timeframe.

This band has the potential to become a truly global band for mobile broadband use.

The frequency band in the range 2700 – 2930 MHz

Ericsson is currently providing trials in this range using LTE-Advanced equipment to demonstrate the capability to deliver very high peak data rates of the order of 1 Gbps in the mobile environment, while utilizing the merits of MIMO antennas.

Ericsson is of a view that the globally harmonized range 2700 – 2930 MHz could play an important part in the provision of advanced mobile broadband services and applications using the LTE-Advanced standard to enhance future capacity requirements especially while considering that the range is adjacent to the band 2500 – 2690 MHz which would be favorable in terms of reusing current network topologies and equipment and providing same overlay coverage with the aim of improving the grade of services. The current use is very limited in the range 2700 – 2900 MHz and could therefore be harmonized for mobile broadband services cross over Europe.

The current limited use of aeronautical radionavigation and weather radar systems in the range 2700 – 2900 MHz could be considered to be moved to the frequency band 2950 – 3000 MHz. The reasons for such move being that earlier studies where proponents representing radar users are suggesting that coexistence between IMT, on one hand, and the aeronautical radionavigation and weather radar systems, on the other hand, is not feasible, due to the level of isolation needed to protect radar against co-channel operation from mobile broadband systems.

The frequency range 3800 – 4200 MHz

Ericsson is of the view that the range 3800 – 4200 MHz will play a very important part in the provision of very high peak data rate mobile broadband service using the LTE-Advanced standard to satisfy the challenging future consumer demands.

The range 3800 – 4200 MHz represents a contiguous spectrum range for mobile broadband services using macro, micro and pico cell topologies for future heterogeneous network topologies. This range would allow for the full potential of LTE-Advanced capabilities including support for bandwidths of up to 100 MHz as well as the aggregation of carriers of macro, micro and pico cells (small cells), including the need for capacity enhancements in hotspot areas. Taking into consideration the increasing traffic in bands below the frequency 3 GHz, the possible use in the range 3800 – 4200 MHz will play an increasing role as being capable of fully be exploiting the capabilities of future LTE-

Advanced systems. Possible mobile broadband use in the range 3800 – 4200 MHz will benefit from the significant advantage represented by the adjacency to the bands 3400 – 3600 MHz and 3600 – 3800 MHz allowing for a significant amount of contiguous spectrum across the whole range 3400 – 4200 MHz.

Frequency bands around the frequency 5 GHz

Ericsson wishes to bring forward the notion that LTE and RLAN (Wi-Fi) technologies are currently being integrated in commercial mobile broadband networks to a converged system and therefore a possible extension of the range 5 GHz would result in a very favorable resource for the integrated LTE and RLAN infrastructure and mobile devices being able to use the consecutive range 5150 – 5925 MHz. European Commission and the European Commission Member States are therefore invited to consider the need for coexistence of LTE and RLAN on one hand and with other users on the other hand in the ranges 5350 – 5470 MHz and 5725 – 5925 MHz.

Even though LTE and Wi-Fi are different radio interfaces; they are being integrated into the same core network, and indeed the same radio access network. Notably, the coexistence situation for LTE is very different from that of Wi-Fi; a service provider cannot easily deploy LTE and Wi-Fi networks in the same frequency band. From a regulatory point of view, there is a differentiation in that Wi-Fi allows regulatory laxity at a cost in spectral efficiency and low complexity, but a gain in access to free unlicensed spectrum. In the case of LTE, the system design largely depends on spectrum user rights; such spectrum ownership creates a value chain, which justifies a high degree of coverage, service quality and functional capabilities. Each technology has carved an ecosystem in separate environments, but now they are subject to technical and commercial integration.

The possible subsequent regulatory consequences while reviewing bands in the range 5 GHz need to be taken into account and considered with some care.

Future additional spectrum resources

Ericsson believes that the requirement for much more bandwidth for the delivery of extremely high peak data rates to provide for the very advanced services and applications will continue to grow well beyond the current 2015 target date covered in the RSPP. Ericsson predicts rapidly increasing growth in mobile broadband traffic and subscriptions also to continue in the future. Therefore, the market expectations and the hunger for new innovative and advanced services and applications are driving our research programs. These expected market demands will continue to place persistent pressure on the radio spectrum resources to provide much more bandwidth, required to deliver the new innovative and very advanced mobile broadband services in years beyond 2020. Ericsson invites the RSPG additionally to consider proposals to establish processes in the research domain that would complement the currently proposed spectrum roadmap. Such proposal, for research, could include considerations of higher frequency bands for future implementations much greater bandwidths.