RSPG public consultation on 5G

The Ericsson Response

Ericsson Response to “Public consultation on the Draft RSPG Opinion on spectrum related aspects for next-generation wireless systems (5G)”

Ericsson welcomes the opportunity to respond to the RSPG consultation on “DRAFT RSPG Opinion on spectrum related aspects for next-generation wireless systems (5G)”.

Ericsson appreciates and supports the RSPG activities to provide an opinion towards European leadership in deployment of 5G. Ericsson understands that such a RSPG opinion is addressing approaches for a possible large-scale and Pan-European commercial launch by year 2020. Accordingly, the availability of suitable and sufficient spectrum resources is regarded as a key element of the forthcoming effort of policy makers and regulators to establish realistic regulatory regimes for 5G.

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Ericsson would like to provide the following views on items 1 through 6 of Section 2 in the draft opinion:

1) Ericsson is clearly aligned with the RSPG draft opinion regarding the importance of the frequency range 3.4 – 3.8 GHz. Ericsson firmly believes that this frequency range is essential for a successful and early deployment of 5G in Europe, and that it can offer both extended coverage and wider bandwidths in comparison to currently available bandwidths for mobile broadband services. Radio wave propagation characteristics will provide opportunities for excellent indoor coverage from macro base stations in many cases, and to a large extent allow re-use of the already deployed infrastructure sites of mobile broadband networks. Bandwidths may be significantly increased in comparison with currently available mobile broadband frequency bands, supporting a considerably enhanced user experience.

   Ericsson notes that significant efforts should be considered by European policy makers and regulators to guarantee that the entire frequency range can be used for 5G. It should be ensured that mobile broadband stakeholders will not suffer from the current situation of fragmentation in this frequency range due to the varying use of other applications and the diverse arrangements between the European countries. Additionally, Ericsson would like to stress that from a longer-term perspective, serious consideration should also be given to the currently underused 3.8 – 4.2 GHz range, as an essential and necessary extension to 3.4 – 3.8 GHz to meet the 5G expectations on high data rates and short latency by European consumers, as well as businesses, industries and Government users.

   From a harmonization and cost-efficiency perspective, considerable benefits can be expected from the interest shown for this frequency range by several countries outside of Europe, such as China, Japan and the USA.

   It is important though to be aware that the spectrum range 3.4 – 4.2 GHz alone will not be sufficient to deliver full 5G capabilities, as the bandwidth available will not be capable of delivering the very high bitrates envisioned for certain applications or the extended coverage needed for others. As a consequence, initiatives to designate other bands for 5G use are also necessary, including higher bands above 6 GHz for high capacity services, or indeed bands below 6 GHz for extended coverage. In our view, there is no single band that could provide a solution that will address all 5G services and applications with regard to wider bandwidth, shorter latency and extended coverage requirements.

2) Ericsson understands that spectrum resources below the frequency 1 GHz are crucial for provision of deep indoor coverage and extended outdoor coverage, in particular for mMTC and URLLC applications. The 700 MHz band can provide such propagation characteristics for early 5G deployments, and, in the long-term, spectrum below 700 MHz should be considered for additional bandwidth in this frequency range with excellent coverage properties, while also considering the declining demand for terrestrial linear broadcasting television services in this range as well as changing television consumer behaviour. As remarked in the comments on item 1, it is imperative to also provide other bands for 5G deployment, to ensure sufficient bandwidths for advanced applications and services.

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3) Ericsson supports the intention that technical and regulatory conditions should ensure that bands already harmonised for mobile broadband networks should also be available for 5G. It is our view that the timing of such a transition should be determined by mobile broadband network operators, i.e. that the timescale for such a transition should neither be mandated on a national level nor on a Pan-European level.

   Ericsson expects that such a transition will not take place in the near future and that the timing will vary substantially from country to another. In other words, the frequency bands already harmonised and licensed for 2G, 3G or 4G are not expected to be part of the pioneer bands for early deployments of 5G.

4) Ericsson appreciates that there are several bands above 24.25 GHz that could be of relevance for 5G deployment, and notes that there is already considerably momentum around the 26.5 – 29.5 GHz range, in particular in the USA and in Korea, but also in Japan and China. Europe should take into consideration the ongoing activities in these countries in order to benefit from valuable harmonization and timely availability of infrastructure equipment and devices. An attractive alternative, from that perspective, is the adjacent and overlapping frequency range, 24.25 – 27.5 GHz. Although this would not enable harmonization from a traditional point-of-view, in the sense that Europe would be using a slightly different frequency range; this overlapping spectrum range may still provide the harmonization benefits in terms of economy-of-scale, early eco-system availability and roaming. A so-called “tuning range” approach could be applied to the 5G radio equipment, i.e. the same equipment could support the adjacent and overlapping frequency ranges 24.25 – 27.5 GHz and 26.5 – 29.5 GHz, thus enabling the crucial harmonization advantages at an early stage due to the timing of 5G introduction in the range 26.5 – 29.5 GHz outside of Europe.

   A tuning range solution for Europe may be relevant for other combinations of frequency ranges. For instance the range 26.5 – 29.5 GHz could be considered together with the range 31.8 – 33.4 GHz, and further the entire range between the frequencies 37 GHz and 43.5 GHz. One should however note that the candidate range 31.8 – 33.4 GHz is not immediately adjacent to the 26.5 – 29.5 GHz range and that passive services have a primary allocation just below the frequency 31.8 GHz, which may imply additional challenges for equipment designs. The mobile vendor industry is currently investigating equipment capabilities in relation to tuning range solutions.

   Ericsson invites European regulators and policy makers to continue the dialogue with the industry regarding realistic assumptions on tuning ranges and adjacent frequency band requirements, to ensure that both limitations and flexibility of product design is taken into account properly. Ericsson further urges efforts to maximize harmonization of spectrum ranges from a global perspective.

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5) The three ranges proposed by the draft RSPG opinion, 24.5 – 27.5 GHz, 31.8 – 33.4 GHz and 40.5 – 43.5 GHz, should all be prioritized for further studies. Indeed, as indicated above, 24.5 – 27.5 GHz should be given serious consideration as a band for early deployment in Europe. Regarding the range 31.8 – 33.4 GHz, it is noted that whereas the usage of incumbents may be limited, there may be issues with applications in the passive service allocation below the frequency 31.8 GHz that need further study. Further consideration may be given to the 40 GHz frequency range, in order to investigate possibility for extending this range below the frequency 40.5 GHz.

   Although Ericsson believes that the list of frequency bands for study under the WRC-19 Agenda Item 1.13 provides good opportunities for Europe, Ericsson would like to stress, again, the importance of taking into account the development in countries outside of Europe. Momentum in the 28 GHz and 40 GHz ranges provides important opportunities for global alignment, as described in the answer to item 4.

6) Ericsson would prefer to have Least Restrictive Technical Conditions (LTRCs) for 5G spectrum available before WRC-19, ideally already in 2018, to enable timely standardization and design of base station and terminal equipment.

Ericsson welcomes a continued dialogue with RSPG regarding frequency bands for 5G in Europe.

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