Nokia response to RSPG consultation on Third Opinion on 5G implementation issues

Nokia thanks RSPG for the opportunity to provide comments to RSPG consultation on Third Opinion on 5G implementation issues. Nokia appreciates the RSPG work on the timely development of 5G in Europe but has some concerns due to the lack of concrete actions to make the pioneer bands 3.4-3.8GHz and 26GHz available in a timely manner across European Member States. Good progress has been made in some countries (e.g. Finland, Spain) but unfortunately, only few European countries have announced their plans for 5G spectrum awards for the pioneer bands 3.4-3.8GHz and 26GHz. Both bands are subject to provisions in the European Electronic Communication Code with deadlines to assure availability of parts of the two bands by December 31, 2020, but the situation in different countries varies a lot:

- Although the 3.4-3.8GHz is the most important global initial band for 5G and it has a very high priority in RSPG, many European countries have not yet progressed in making tangible steps to enable 5G in the 3.4-3.8GHz band;
- On the other hand, the availability of the whole 26GHz (3GPP Band n258) band is an essential precondition for the development of consistent equipment ecosystem for the band.

All possible means should be used to make these bands available as soon as possible for 5G with sufficient bandwidths.

Nokia gives its views on the detailed topics below:

I. Concerning the Defragmentation of the 3.4-3.8 GHz frequency band:

1. The RSPG recommends that Member States (MS) design spectrum award mechanisms that provide the opportunity to obtain sufficiently large contiguous spectrum blocks to facilitate high throughput multi-Gb/s 5G services such as enhanced mobile broadband. The RSPG notes that national awards processes may result in various spectrum blocks sizes due to market players strategies and that trading/leasing of rights of use (“spectrum trading”) could also be considered as part of the national defragmentation tools/policy.

Nokia understands that the situation in different countries can be different but urges EU and Member States to prioritize 5G on their agendas and to facilitate an early implementation of 5G in their countries. We see the existing fragmentation of the band as a real issue where EC should and could help to solve. We agree that spectrum award mechanisms should provide the opportunity to obtain sufficiently large contiguous spectrum blocks to facilitate high throughput multi-Gb/s 5G services such as enhanced mobile broadband. Additionally, the main design objective of the spectrum auctions should not be to maximize one-shot revenues to the treasury but to meet the overall targets of improving mobile broadband services offered to the citizens and maximizing the overall economic benefit and efficiency in the spectrum usage. As such, the spectrum pricing should not impede the investment capabilities of the licensees to roll-out their networks.

Technology-wise, to fully enable 5G use cases and 5G user experience, 80-100MHz contiguous spectrum per Mobile Network Operator (MNO) is needed in the 3.4-3.8GHz range. Regulators can offer spectrum in smaller abstract blocks and let the market decide e.g. in an auction on the amount of spectrum per MNO. After the initial round of assignments, the amount of spectrum per MNO, physical block re-assignment can be done to secure contiguous spectrum per MNO.

Nokia is of view that spectrum band arrangements should aim at assuring the most effective usage of the band for delivering full 5G services and that the design of the spectrum award mechanism should facilitate the acquisition of sufficiently large contiguous spectrum blocks. Each Member States should make all possible efforts to achieve these goals. In the case of partial liberation of the 3.4-3.8GHz band, license flexibility should also be considered to allow for future defragmentation and possibility to have contiguous spectrum through swapping. As such, Nokia welcomes the provisions in the Electronic Communication Code meant to enhance the development of the secondary market.

2. The RSPG notes that, taking into account different national legacy situations and competitive landscape, Member States may need different approaches at national level in order to achieve the above defragmentation objectives. In this regard, the RSPG recommends that Member States consider the guidance on defragmenting the band that has been developed by the CEPT (ECC Report 287).

Nokia supports all efforts to progress defragmentation of the 3.4-3.8GHz band. The defragmentation should not, however, only be left on the responsibility of individual Member States but EC should also strongly encourage them to defragment and make the full 5G pioneer band 3.4-3.8GHz available. Further coordination between Member States and an effective use of the Peer Review Forum / RSPG might help achieving the defragmentation objectives that are mandatory if Europe wants to realize the 5G Action Plan as enhanced by the 5G ministerial declaration of Tallinn (June 2017).

3. The RSPG recommends that, in order to facilitate 5G use in this primary band and subject to national situation, Member States phase out, as soon as possible, legacy ECS use in the band, which is not compatible with the 5G harmonised technical conditions.

Nokia agrees that, as part of the defragmentation activity, clearing the spectrum of technologies that are not compatible with the 5G harmonized technical conditions is of key importance. The band reorganization should target sufficiently wide carrier bandwidths (80-100MHz per network in the pioneer band 3.4-3.8GHz) for the 5G operations.

II. In order to ensure connectivity for vertical industries:

4. The RSPG notes that 5G will play a significant role in providing a communications service that meets the specific requirements for verticals alongside others technologies.

5G can be leveraged for vertical industries in different ways: through network slices in MNO networks, or individual/private networks using leased spectrum (through “use-it-or-lease-it” mechanisms), or dedicated spectrum for such entities. Nokia agrees that 5G can offer economies of scale benefits for vertical industries. However, these benefits can only be achieved if the verticals can use the harmonized IMT spectrum for which 3GPP has specified band definitions. The spectrum intended for verticals also needs to be widely used in the commercial operator domain to ensure the availability of a rich ecosystem with affordable cost of the equipment. When setting aside harmonized spectrum for vertical industries, regulators should carefully assess that such provisions do not override the MNOs’ needs.

5. The RSPG notes that connectivity for vertical industries could be provided by mobile operator's solutions, third-party providers and directly by verticals themselves in EU harmonised ECS bands or in dedicated spectrum for verticals.

Nokia agrees with these observations. Many verticals' applications requiring wide area coverage and/or mobility naturally fall into the domain of MNOs who can serve these connectivity demands with network slices. However, in some cases, e.g. in rural places, sufficient MNO service provision may not be available on a cost-efficient basis. For local high performance requirements, e.g. in production industry, private networks built and operated by the verticals themselves or third-party providers may be required for operational, QoS and privacy reasons. Such an approach may prove beneficial to MNOs assuming that they can provide their services over privately built and operated networks. Thus, MNOs and verticals can have a true win-win situation sharing extensive RAN infrastructure and scarce spectrum resources to the mutual benefit.

In respect to the spectrum fees, the problem of equal treatment may arise if MNOs are subject to auction fees and conditions and verticals get part of the same spectrum by application only. A balance should be stricken as it is partly a competition on the same spectrum resource but also same service provision.

Overall, Nokia supports a regulatory approach allowing for the development of a variety of business models in 5G as appropriate and beneficial to the interested parties as long as this does not create unfair competition.

6. The RSPG recommends that Member States consider other spectrum solutions including dedicated or shared spectrum for the business/sectoral needs ("verticals needs") that may not be met by mobile operators. Such solutions could take advantage from economies of scale and ecosystem availability in spectrum bands with EU harmonised technical conditions.

Nokia supports this recommendation under above conditions in addition to the option of sub-lease of MNO spectrum. One potential band for verticals could be the 2300-2400MHz band, where a 3GPP ecosystem already exist, as well as the Licensed Shared Access (LSA) framework for the cases where the band is partially unavailable. LSA would fit well for verticals use that is typically local in nature. Another potential frequency band could be portions of the 3.8-4.2GHz band that is already specified in 3GPP. Some countries (US, considerations in UK) plan to implement it, which would ensure the equipment availability. This type of use would also facilitate sharing with FSS quite well, e.g. in line with ECC Report 254 (Operational guidelines for spectrum sharing to support the implementation of the current ECC framework in the 3600-3800 MHz range).

7. The RSPG notes that, in addition to the above, in order to respond to some targeted EU public policy objectives requiring, for example pan European services for specific verticals, there may be need for technology neutral dedicated EU harmonised spectrum. RSPG recommends assessing these needs on a case by case basis and is ready to give its view when/where appropriate.

This solution is already in place for ITS and Railways applications. Dedicated pan European spectrum for verticals (and not harmonized for ECS) should be retained only for cases where specific requirements like large geographical or national coverage, need to be taken into consideration.

Nokia considers that such situations should not be a general rule for verticals and agrees that it should be assessed on a case by case basis and that, in general, verticals' needs are better accommodated in frequency bands already harmonized for ECS in the EU.

8. The RSPG recognizes that, in order to support implementation of EECC, the European Commission might consider additional recommendations on spectrum use for verticals and in this case, it should seek advice from the RSPG.

The implementation of the spectrum provisions under the EECC is essential to assure a higher harmonization in the rules at Member States level. For this reason, the transposition of the spectrum chapter of the Code should be started immediately after its adoption to assure similar conditions and better coordination between the Member States.

While the decision to set aside dedicated spectrum for verticals stays national, Nokia recommends that such decisions should seek minimizing the risk of fragmentation and avoid introducing supplemental coexistence issues between networks. Flexibility should be given to the market players to sub-rent spectrum locally or enter in sharing models through commercial negotiations rather than imposing strict conditions that might lead to inefficient use of the spectrum.