

Additional spectrum needs and guidance on the fast rollout of future wireless broadband networks

Nokia's response to the Draft RSPG Opinion

Nokia welcomes the opportunity to comment the RSPG Opinion on “Additional spectrum needs and guidance on the fast rollout of future wireless broadband networks”. This response is complementary to those provided via the industry association of which Nokia is member, namely GSA and DIGITALEUROPE. It should also be considered in conjunction with the responses to the Opinions on the Radio Spectrum Policy Programme (RSPP) and on Spectrum Sharing – Pioneer initiatives and bands.

As highlighted in the introduction of this Opinion, 5G is the most important technology evolution of the wireless broadband in the near future and timely availability of suitable and sufficiently harmonised spectrum is critical to ensure that networks will deliver the expected quality of service for the 5G applications and services. However, Nokia notes that while the deadlines set up by the EECC and the UHF Decision for the RSPG identified pioneer bands have passed, their release has been slowed down in EU countries, partly because of the Covid pandemic and partly due to the unavailability of part of this spectrum. While several commercial 5G networks are already available in Europe, the use of the pioneer bands is still subject to their availability and to scheduled assignment processes during the 2021-2023 period. These aspects should be taken into account and pondered when interpreting the responses of the Member States to the questionnaire. Moreover, Nokia observes that the guidance on the fast rollout of the future wireless broadband networks is not addressed in this Opinion.

Hereinafter we provide Nokia's comments with respect to the findings and recommendations of the RSPG following the feedback received from the Member States to the RSPG's questionnaire on the additional spectrum needs.

1. Recognizes that the current demand in the majority of MS for additional spectrum is mainly for the mid-bands.

Nokia agrees only partially with RSPG's outcome, as future deployment of 5G networks requires a mix of low-, mid-, and high- spectrum bands to fulfil the requirements for the different 5G use cases. Current demand in the Member States should be interpreted in connection with spectrum availabilities as well. According to the 5G Observatory, assignment of the pioneer bands was delayed due to the Covid pandemic in 2020 and a number of the auctions initially scheduled for H1 2020 have “already taken place in the last months, or are expected by Q1 2021 or later” (*source: 5G Observatory 10, Dec2020*).

While the Opinion mentions only the mid bands, additional low band spectrum is also required in the future. Demands for additional spectrum for wireless connectivity are carried over at international level by the mobile industry in the context of WRC-23 under the Agenda Items 1.2, and 1.3 for mid bands and 1.5 for low bands.

Availability of additional UHF spectrum (in the 470-694/698 MHz range) can bring great benefits to achieve improved coverage, capacity and performance in sparsely populated areas and some suburban areas as well as in hard to reach locations (e.g., deep indoors). Beside enhanced mobile broadband services, it is necessary to address a growing range of applications¹ requiring good propagation characteristics in an economically efficient manner.

2. Recognizes that spectrum demand for verticals has been addressed in the mid bands in a dissimilar way in MS, due to different national circumstances (e.g. priorities for efficient spectrum use).

From an equipment vendor perspective, harmonised solutions are preferred for any service to encourage larger scale deployments and economies of scale. Nokia agrees that especially in the mid-bands, the verticals demand has been approached differently at a national level by the Member States, leading to some market fragmentation. Setting aside spectrum in bands with high demand can lead to spectrum scarcity and artificial increase of the spectrum prices.

Nokia welcomes consideration of the 3.8-4.2 GHz band under recommendation 6 and proposes to equally consider 6425-7125 MHz as additional upper mid-band resource, both for CSPs and verticals, substantially providing relief on scarcity, and allowing to achieve the mobile industry recommended contiguous bandwidth of minimum 80-100 MHz per communication service provider (CSP network), and to provide additional options for spectrum for vertical use.

3. Recognises that there is a demand for vertical use in the mmWaves.

As in the case of the mid bands, to enable and encourage digital development of industries, the use of high frequencies for 5G private networks can respond to specific cases of improved performance and reliability.

As 5G networks continue to expand and the use cases to diversify, we expect the demand for high band spectrum - from both mobile operators and private industries - to accelerate in the coming years as infrastructure, chipsets and devices supporting the 24.25-27.5 GHz band will be available this year.

The mmWave offers an opportunity for indoor and outdoor mobile services in hotspot type areas such as stadiums, railway stations, busy streets, factories, campuses, etc., as well as fixed wireless access home and enterprise broadband deployments. However, as the global market in

¹ A study of spectrum needs of C-V2X network-based (V2N) communications (cellular vehicle to everything) indicated that additional service-agnostic sub-1 GHz spectrum would provide connectivity for advanced automotive V2N services in rural environments with affordable deployment costs. The study concludes that:

“... c) At least 50 MHz of additional service-agnostic low-band (< 1 GHz) spectrum would be required for mobile operators to provide advanced automotive V2N services in rural environments with affordable deployment costs.
d) At least 500 MHz of additional service-agnostic mid-band (1 to 7 GHz) spectrum would be required for mobile operators to provide high capacity city wide advanced automotive V2N services.”

See: <https://5gaa.org/news/the-new-c-v2x-roadmap-for-automotive-connectivity/>.

these bands is in its early stage, deployments by mobile operators (at national level) are central to create scale and a robust ecosystem from which verticals can benefit.

4. Recognises that there is no specific spectrum need for FWA in the mmWave bands, although operators should also have the possibility to address this application within their spectrum.

As for the enterprises, we expect a growing demand of spectrum in mmWave bands for the FWA as high bands add significant capacity (as compared to lower frequencies). Combined with lower bands the mmWave frequencies can deliver enhanced capacity with improved coverage for more demanding scenarios. With a view on the EU connectivity targets for 2025 and 2030, we see a role for the FWA to deliver connectivity in both rural and suburban areas, with the mmWave frequencies playing a role in delivering capacity in the suburban environment.

5. Recognises that different type of authorisation methods facilitate innovation and different technologies.

Nokia agrees that different authorisation models respond to different needs and technology requirements. We are of view that the existing spectrum authorization frameworks based on individual licensing (with its flavours from national to local licensing) and license-exemption in distinct frequencies, can adequately respond the needs of today.

Individual licensing remains the preferred authorisation regime for nationwide IMT networks for the delivery of services with predictable / managed QoS and will continue to play a central role in securing investments in such networks.

6. Recommends to investigate the possible use of the band 3.8-4.2 GHz for local vertical applications while protecting receiving earth stations and other existing applications and services.

Mid bands offer a balance between coverage and capacity and they respond to the future requirements to ensure citywide continuous capacity and coverage for advanced 5G services in the 2025-2030 timeframe. As such, the 3.8-4.2 GHz and 6425-7125 MHz are the two outstanding possibilities to provide additionally required mid band spectrum to CSPs and verticals in the upcoming period while protecting existing applications and services.

In our opinion it is important for Europe to consider the use of these bands for IMT in the upcoming future and assure their availability for this scope².

The use of the band 3.8-4.2 GHz for IMT services by CSPs or verticals should be decided at national level, depending of the local demands and circumstances like legacy in the overall 3.4-4.2 GHz range. However, when evaluating the future use of the band, the need for mid bands spectrum at local and national level should be evaluated simultaneously. Coherent licensing framework and adequate technical conditions should be considered to avoid market

² Coleago report of December 2020 estimates mid-bands spectrum needs in the 2025-2030 timeframe in Europe See <https://www.coleago.com/app/uploads/2021/01/Demand-for-IMT-spectrum-Coleago-14-Dec-2020.pdf>

fragmentation and assure a robust ecosystem, for both operators and verticals to benefit of economies of scale and prices.

We expect that the digitization of the industries will continue to grow and, as such, their demand for spectrum to increase over time across the different sectors. Their spectrum needs will depend on the use cases in terms of coverage, capacity and performances and will be addressed by a combination of local access and wide national coverage, via private networks and public ones. It is therefore important to consider an efficient mechanism to ensure the best usage of the scarce spectrum resources and encourage cooperation between CSPs and industries.

7. Recommends that options should be developed for addressing vertical needs in the mmWaves, in order to facilitate consistent approaches.

As per our comments in points 3 and 4 above, we see the mmWave bands potential growing in the coming years for IMT deployments by both CSPs and industries. From mobile industry perspective, harmonised approach to specific bands with a balanced use between operators and verticals is essential to allow a robust ecosystem to flourish.

As such, any decision should take into consideration both CSPs and verticals' needs in the mmWaves.

Nationwide licenses with 800-1000 MHz of contiguous spectrum per operator can ensure efficiently consistent performance in hot spots for specific 5G use cases. The contiguous spectrum bandwidth available per operator should take into consideration a number of factors, including the amount of spectrum available, number of operators and the desire/request to also make local area spectrum licences available. Where nationwide availability of spectrum per CSP is not considered/possible, mobile operators should be able to secure city/suburban wide licences where one operator ends up with the same spectrum across all cities/suburban areas.

Given the physical characteristics of the mmWave spectrum, coexistence and interference can be managed more efficiently than in lower bands Therefore, local licenses are more easily conceivable. Several models of licensing in the 26 GHz band are available in Europe as of today; the choice of a licensing model should reflect the national context, the stakeholder demand, and avoid creating artificial scarcity.

8. Recommends that MS publish for transparency any available results of EMF exposure measurements.

Nokia supports measures taken in a coordinated manner by the Member States to communicate in a transparent and comprehensible manner on the Electromagnetic Field (EMF) compliance of mobile networks to thoroughly continue fight misinformation. We acknowledge the role that RSPG and BEREC play in coordinating such measures.

9. Recommends that MS publish for transparency any available results of equipment SAR measurements.

Same as above.

10. Proposes to the European Commission to update EU Council Recommendation 1999/519/EC in order to take into account the revision of the ICNIRP guidelines.

Nokia supports this RSPG proposal and encourages Member States to apply the EU recommendations and avoid imposing stricter limits than those recommended by ICNIRP. Overly stringent EMF emission norms, not based on scientific evidence, should be avoided as they artificially increase population's concerns, leading to difficulties in fulfilling mobile networks coverage obligations and to increased deployment costs due to unnecessary densification.

Moreover, joint and coordinated actions of RSPG and BEREC towards communicating on the harmonised EMF norms at EU level based on updated ICNIRP guidelines would help in setting out accurate public information on the new technology and their relationship with EMF, including for a successful acceptance of 5G networks.