Public consultation on the initial assessments for allocation of the 26 GHz band in Norway

Qualcomm Response

At a time when digital technologies are essential tools to meet the economic, energy and environmental needs, 5G as an "open innovation platform "is a source of growth, innovation, and social inclusion. Qualcomm would like to thank the Norwegian Communications Authority (*Nasjonal kommunikasjonsmyndighet* – Nkom) for the opportunity to provide our view. Qualcomm welcomes this initiative to launch the process to auction spectrum in 26 GHz band in 2023 for 5G mobile services. 26 GHz band offers an opportunity for indoor and outdoor mobile services in urban, sub-urban and rural areas: - for instance, city centers, localized areas such as stadiums, railway stations, factories, campuses, shopping centers, etc., as well as fixed wireless access (FWA) and industrial broadband deployments. 5G mmWave is a technology adopted in several markets with a mature ecosystem of devices. As mmWave adoption continues to spread across the world, handsets, and a variety of other devices and CPEs supporting mmWave are being introduced into the markets.

26 GHz band

In Europe, an increasing number of countries are planning to make mmWave available in 2023. mmWave has been made available in 14 countries (Italy, Spain, Germany, Finland, UK, Denmark, Greece, Sweden, Slovenia, Croatia, Malta, North Macedonia, San Marino, Russia, etc.) and more to come in 2023 like UK, Estonia and Austria which are in the process of making available the 26 GHz band. With high-speeds and powerful connectivity, 5G mmWave is unleashing new possibilities for mobile communications. This wireless technology is already transforming societies around the world[1].

The allocation of the 26 GHz band and the definition of an authorization framework for developing a stable investment environment are fundamental elements. Mobile operators need to be a central part of this licensing and market development so that scale can be maximized which will benefit the entire ecosystem, including the 'verticals', and thus get the mmWave market off the ground.

In terms of the licensing approach, Qualcomm supports Nkom's proposal allowing MNOs to be awarded national licenses with a total of 2,400 MHz available in the 25,10-27,50 GHz. It is critical for mobile operators to get access to a sufficient amount of spectrum for the market to take off. Ideally, a mobile operator should have access to 800 MHz

[1] https://qualcomm.ft.com/

of contiguous spectrum per operator/network. We recognize that this needs to be balanced with the amount of spectrum available, number of operators and whether there is a desire to also make local area spectrum licenses available.

In addition, Qualcomm welcomes the initiative on preserving the ability of verticals to access 26 GHz spectrum by awarding with a total of 850 MHz available in the lower part of the 26 GHz range (24,250-25,10 GHz) - countries such as Sweden, the United Kingdom, Denmark, Finland, Spain have embarked on similar approaches.

Regarding the coexistence, Qualcomm acknowledges the complexity of the incumbent use of the lower 2 GHz in the 26 GHz band in relation to co-existence with fixed links. It is important for Nkom to stop issuing licenses for Fixed Links in the band like many other European regulators have done and plan for their reallocation to another frequency band. Qualcomm welcomes that Nkom considers that the current fixed links will be completely phased out by the end of 2024. Ideally the fixed links should be moved over time from the vicinity where there will be a high demand for outdoor 5G – such as busy pedestrian streets, around the outside of sports stadiums, concert venues, railway stations etc. It is suggested that Nkom consider the idea of 'early outdoor 5G zones' in major cities and the nearby fixed links moved so that wide bandwidth contiguous spectrum is available for multiple networks – as a way to at least 'make a start' until more of the fixed links are migrated and outdoor 5G can be more widely deployed. It is noted that 26.5-27.5 GHz is clear of fixed links now so that this spectrum would be ideal for early 5G outdoor hot spot type deployments in cities including from MNO's.

Furthermore, in general, Qualcomm is of the view that it could be possible to preserve some of the existing earth stations in the Fixed Satellite Service (FSS), in case they are placed in remote areas. Protection against 5G networks could be arranged by defining exclusion zones around the Earth stations. In practice, this means that 5G providers could be awarded national licenses with several well-defined areas around the Earth stations, where 5G use is not allowed or is severely limited. New Earth stations should only be authorized following a commercial agreement between the Earth station operator and the 5G licensee. Qualcomm believes that these kinds of agreements can be achieved between 5G licensees and Earth station operators, especially, at remote locations where 5G is unlikely to be deployed in 26 GHz band.

Finally, Qualcomm would suggest to Nkom to consider the initiative of having licensing obligations and to adopt a balanced approach like in Italy where the regulator issued licenses to operators with deployment obligations within a given time frame to help the market to take off. The recent announcement of TIM[2] in collaboration with Qualcomm to deliver 5G mmWave innovative applications for more efficient city management and next-generation solutions for enhanced immersive experiences is a good example.

[2] https://www.gruppotim.it/en/press-archive/market/2022/PR-TIM-AND-QUALCOMM-COLLABORATE-TO-LAUNCH-NEW-5G-SERVICES-FOR-SMART-CITIES.html

Last but not least, Qualcomm can confirm that infrastructure, chipsets and devices that support the 24.25-27.5 GHz band are widely available in the marketplace. According to the Global Supplier mobile Association (GSA)[3] ,High Bands mmWave licensing global momentum is building:

- 196 operators in 51 countries/territories have been investing in 5G mmWave (testing, trialling, planning, acquiring licenses, deploying, or operating networks)
- 142 operators in 28 countries/territories hold licenses enabling mmWave deployment in one of these bands.
- 28 operators identified as actively deploying or have deployed mmWave spectrum for 5G in 18 countries/territories.

In several countries in Europe, Mobile Network Operators in co-operation with governments, city authorities and infrastructure vendors are exploring and testing new services that are unlocked by 5G mmWave connectivity. Most recently, as an example, the Finnish city of Tampere has laid the ground to become 'one of Europe's fastest cities' as it started to collaborate with Elisa, Nokia, Qualcomm, and CGI in the launch of 5G mmWave. The city's vision is to combine local datasets – on the environment, transport, healthcare, public services, and more – with best-in-class 5G mmWave communications infrastructure to develop and offer better services to its citizens and city authorities alike. To help deliver this ambition, Tampere is currently hosting a 5G mmWave and XR Hackathon. The hackathon invites university and start-up developer communities to compete to design new use cases leveraging on the city's reach data sets. The developers are invited to use mixed reality as the medium for interaction with, and visualization of, the available data, while leveraging Tampere's cutting edge 5G mmWave network. In addition, in February 2023, Telefónica, Ericsson and Qualcomm collaborated to launch the first commercial mobile 5G mmWave network in Spain during the mobile industry's largest connectivity event, at Mobile World Congress 2023, Barcelona4. This technology milestone allowed compatible user devices partners to access the Ericsson-powered Telefónica 5G mmWave network. Qualcomm showcased the broad range of global 5G mmWave devices powered by Snapdragon mobile platforms that drive industry advancement forward. The use of 5G mmWave spectrum is the optimum way to achieve high speeds and high capacity and to deliver the best 5G experience in crowded areas. Especially interesting is the role of 5G mmWave in the area of Fixed Wireless Access, digitalization and Industry 4.0, providing extremely high-performance coverage and enabling a completely new range of use cases to be explored. Based on its high network capacity and extraordinary performance boost, this 5G mmWave deployment enables an extraordinary 5G user experience allowing the ultra-fast mobile connectivity at lower latency that will transform the way they realize mobile connectivity.

[3] GSA May '23. www.gsacom.com
[4] https://www.qualcomm.com/news/releases/2023/02/telefonica--ericsson-and-qualcomm-launch-first-commercial-mobile