Ofcom Consultation

Enabling mmWave spectrum for new uses - Making the 26 GHz and 40 GHz bands available for mobile technology

About Ericsson

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York. www.ericsson.com

Ericsson welcomes the opportunity to respond to Ofcom's consultation "Consultation: Enabling mmWave spectrum for new uses (ofcom.org.uk), 9 May 2022"

Ericsson Summary:

Ericsson welcomes Ofcom's ambition to enable wireless services in the broader economy, drive efficiency and support innovation, ensuring spectrum, this invisible, essential, and finite resource is used efficiently. The ambition to support the delivery of high-quality connectivity and innovation is essential to delivering good outcomes for businesses, industries, consumers, and citizens. Long-term planning and effective spectrum licensing plays a vital role in providing operators with access to this necessary resource. It is critical for mobile operators to get access to a sufficient amount of contiguous spectrum per operator/network. 5G services require spectrum capacity in low, mid, and high bands.

High band, above 24 GHz, offers the greatest opportunity for operators to deliver unprecedented peak rates, low latency, and high capacity. The 5G mmWave spectrum is a valuable resource when targeting sporting arenas, densely populated urban areas with many mobile devices, and mission-critical services.

Many scenarios using enhanced mobile broadband will directly benefit from high network capacity in urban environments. These include popular, crowded areas and hotspots with large numbers of smartphone users, for example stadiums, festivals or other large events. Similarly, last mile fibre/copper complements, macro and street macro levels offer service providers the opportunity to seamlessly bring high-capacity connectivity to urban dwellers and professionals. Low latency characteristics of 5G mmWave will improve surveillance and video streaming/broadcasts, everywhere AR/VR for enhanced entertainment experiences, and the evolution of the 5G smart factory. Aggregating the 5G low band with the 5G high band can improve high-band coverage by up to 10dB extending the high-band cell coverage area by up to 3.7 times. The extended high band coverage also enables a greater offload of traffic from the lower band to the high band, providing a higher throughput at the cell edge. Figure 1 outlines the need for network operators to have a fully coordinated multilayer network with low, mid and high bands for the best performance and the flexibility to secure service differentiation.

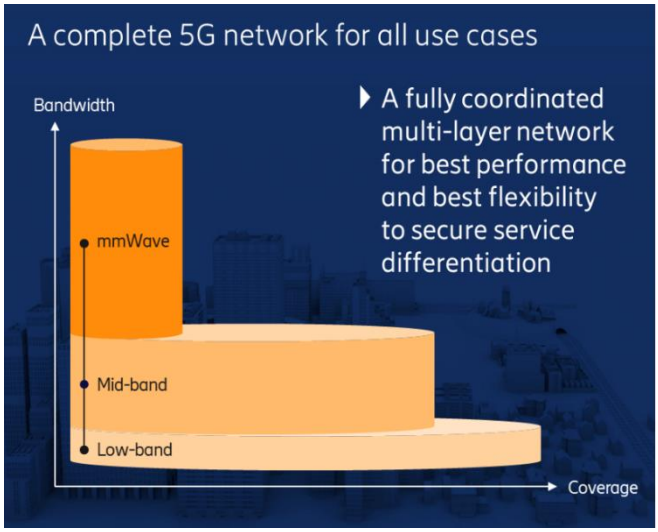

Figure 1: A complete 5G multi layer network.

Today Operators are deploying high capacity mmWave radios for a range services, on existing rooftop sites, in high traffic hot spots like stadiums for sports fan experience applications, street macros to build city coverage and for 5G FWA deployments.

Operators in Asia where ISD for existing sites is short, mmWave adds capacity and peak rates and in a multilayer network provides full 5G coverage.

FWA deployments with good line-of-sight propagation conditions, between high tower radio sites and outdoor rooftop mounted Customer Premise Equipment (CPE, i.e. FWA terminal), can deliver much longer mmWave cell ranges – up to several kilometres. Recent trials have demonstrated gigabit performance even beyond 7 kilometres.

Ericsson request that Ofcom considered the following points as input to the mmWave proposal: -

- Operators will need a minimum of 800 MHz contiguous mmWave spectrum to support optimum 5G services requiring higher speeds, low latency and larger amounts of traffic. This could be nationwide licences or if this is not preferred then we would suggest a minimum of city/suburban wide licences where the mobile operator is assigned the same spectrum across all cities/suburban areas.

- The current proposal for high density allocation is a maximum of 2400MHz, which if split across 4 operators will result in only 600MHz per operator. Ericsson advise that allocation of a minimum of 800MHz contiguous bandwidth is needed for 5G services. This is acknowledged in the consultation but not specified in the proposed award structure.

- It is unclear how the current proposal will safeguard against spectrum fragmentation which makes re-farming more complex and can undermine spectrum harmonization.

- It is stated that where city wide licence spectrum is unsold it will be offered via the shared access licence framework which under the current conditions would be low power. Ericson would advise that all licences should have the potential of at least medium power.

- It will be challenging for an operator with a city-wide licence to extend coverage via the shared access licences in dense areas due to the mix of power requirements.

- An operator may not be able to offer a consistent service and coverage to their customers, if they are not able to secure consistent spectrum in all high-density areas.

- There is no guarantee that operators will secure the same contiguous spectrum across multiple high-density areas. This could present challenges managing their supply chain, inventory and ability to offer a consistent service.

- Ericsson suggest that Operators should be allowed to determine the power levels of the solution, depending on the use case.

- The proposed high-density areas are based on a static measurement and doesn't consider future traffic models, population migration, new infrastructure builds.

- Today's deployments of mmWave requires an anchor band, this is not considered in the consultation.

- Shared access Licences are indefinite, however the need to start transmission within six months is exceptionally challenging given the time it takes to get appropriate planning and access approvals.

- The shared access licence conditions allow Ofcom to revoke licences for spectrum management purposes, subject to a minimum revocation notice period of one month. The ability to revoke at short notice could be prohibitive when considering the business case for investment.

- The proposal to limit City wide licences to 5, 10 or15 years, could undermine investment decisions.

- If an operator cannot secure a citywide licence, then they will need to consider the practical implications of the 50m radius, 10M height, low power restrictions. This is likely to limit the service offering.

- It might be difficult for operators to make an informed judgement on the availability of 40GHz spectrum band given the immaturity of the supporting eco-system. It is critical for the UK to make available at least the 26 GHz band in early 2023 and to provide the industry with a clear timeline so that Mobile Network Operators can plan accordingly investments and have a clear path to commercialization.

- A license duration of at least 20 years will create a period of certainty that is needed for operators to invest, expand and upgrade networks.

- To support spectrum efficiency, Ofcom could consider the establishment of a voluntary spectrum leasing and trading scheme among operators facilitated through clearly defined spectrum rights.