Enabling mmWave spectrum for new uses

Ericsson's response

About Ericsson.

Ericsson is one of the leading providers of Information and Communication Technology (ICT) to service providers. We enable the full value of connectivity by creating game-changing technology and services that are easy to use, adopt, and scale, making our customers successful in a fully connected world. Our comprehensive portfolio ranges across Networks, Digital Services, Managed Services and Emerging Business; powered by 5G and IoT platforms.

Ericsson welcomes the opportunity to respond to Ofcom's Statement and further consultation: Enabling mmWave spectrum. Response is due on 22 May 2023.

Summary of Ericsson view:

mmWave solutions can provide very high capacity and user throughput and are attractive options for capacity expansion and enhancement of user experience. Propagation conditions are more challenging at higher frequencies making Massive MIMO and adequate TRP levels for base stations essential. The preferred mmWave deployments are targeted at high traffic areas, e.g., sports stadiums, stations, airports, and city hotspots. In these areas, mmWave delivers high user peak rates and cost efficient capacity. Today service providers deploy mmWave radios on existing city macro sites, typically on rooftops, adding significant capacity to the site, utilising their multi-band (low, mid, and high band) network.

mmWave is also deployed for fixed wireless access (FWA), where the UE can be designed with higher antenna gain and output power and can be located outside the building to avoid penetration losses. Good line-of-sight propagation conditions, between high tower radio sites and outdoor rooftop mounted Customer Premise Equipment can deliver much longer mmWave cell ranges, up to several kilometres. The combined use of mmWave and mid-band provides an efficient network solution, where mmWave serves households in good conditions and mid-band serves households in less favourable conditions. With the capacity offload enabled by mmWave, mid-band can serve more households at more distant and challenging locations. This provides an opportunity to offer high-end wireless fibre services in more rural areas, serve more households per radio site, and support higher data consumption.

Coordinated communication using all the available frequency bands maximises the benefits of each of the bands where best needed. Efficient coordination between the different frequency layers in the network is very important to reach a superior network experience, i.e., coverage everywhere, substantial capacity almost everywhere and extreme capacity where needed. This is particularly important for mmWave deployments as the performance potential is substantial, but coverage can be challenging. Beamforming, beam management, traffic management and efficient multi-layer spectrum band interworking, enables a fully coordinated multi-layer network, providing the best performance and flexibility to secure service differentiation.

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

- It is anticipated that many mmWave deployments in cities will be on rooftops, therefore Ericsson recommend TRP levels of at least 33dB/200MHz for base stations to support these types of network deployments.
- There are instances where service providers may choose to deploy narrow channels and the current proposed TRP limits could be restrictive. Ericsson propose minimum TRP levels of 33dB/200MHz for medium power and 28 dBm/200 MHz for low power.
- FWA deployments will benefit from higher TRP limits to deliver longer mmWave cell ranges.
- mmWave will be most efficient and effective in a multi-band network, ensuring users have a consistent experience.
- Ericsson would recommend that licences have a 20 year term to ensure a period of certainty that is needed for operators to invest, expand, and upgrade networks.
- It might be difficult for service providers to make an informed judgement on the availability of 40GHz spectrum band given the immaturity of the supporting eco-system.