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Vodafone Group's response to the Public Consultation on the Draft RSPG Opinion on ITU-R World Radiocommunication Conference 2023

Vodafone welcomes the opportunity to respond to RSPG on its draft opinion on ITU-R World Radiocommunication Conference 2023.

As the largest converged Mobile and Fixed Broadband operator in Europe, with operations in 10 EU countries, Vodafone is committed to providing the best solutions for customers to meet Europe's digital needs. Vodafone is aligned with the European Commission in its vision of achieving a Digital Single Market and ensuring that European citizens, enterprises and industries have access to the best connectivity across both Mobile and Fixed Networks, and the benefits of the economies of scale that the Union can deliver where Member States act together.

In June 2021, the European Commission announced its decision to nearly double the amount of spectrum available for Wi-Fi networks, ensuring fixed broadband users will be able to enjoy all the future benefits of gigabit connectivity when accessing these services through WiFi. It is however critical that public 5G mobile networks are also allocated the necessary spectrum resources to provide seamless and ubiquitous high-quality connectivity in this decade and beyond. Vodafone customers will require public mobile and WiFi fixed access services to be able to evolve in tandem over coming years, and spectrum decisions should accommodate customers' total communications needs.

Vodafone and other mobile network operators in Europe continue to invest significantly in 5G through spectrum acquisitions and network deployments, offering new and enhanced Mobile services to European citizens and industries. Vodafone has already launched 5G in 11 European markets (and 3 markets in Africa) covering 318 cities across Europe. Globally, 5G is accelerating, with 198 operators in 77 markets launching commercial mobile services as of Q1 2022, with 422 operators in 132 markets expected to have launched by the end of 2025.

It is also forecasted that more than 275 million 5G capable smartphones will be shipped in 2022, reaching over 5 billion by 2025, with 5G connections expected to total 2.3 billion[1]. Furthermore, over 1,300 5G devices designs have been launched or are in development, including not just smartphones, but other connected devices such AR glasses, watches and other wearables as well as integrated modules for, among others, connected cars, machines and laptops, which require anytime, anywhere connectivity.

[1] Qualcomm estimates, February 2022

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C2 General

Compared to 4G, 5G represents a step-change in connectivity provided through national public mobile networks. 5G provides an increase in capacity and speed as well as lower latencies, enabling a wide range of new enhanced broadband, Metaverse and IoT services, which will deliver novel applications in areas such as healthcare, transport, clean energy, manufacturing and the environment.

A study for the European Commission focusing on the automotive, healthcare, transport and utilities sectors in Europe calculated that 5G would deliver first-order benefits of €62.5bn per annum in 2025, with €50.6bn in second-order benefits arising from 'knock-on' impacts from the use of goods and services. Another recent study by GSMA Intelligence concludes that 5G is expected to generate $960 billion in gross domestic product (GDP) in 2030 on a global basis.

Consequently, high speed 5G connectivity is a central pillar of Europe's economic renewal, and its rollout and use are essential in increasing the region's competitiveness and regaining strategic autonomy. It is therefore not surprising that Europe's digitalisation targets include the aim of covering all populated areas with 5G by 2030.

At present, the majority of 5G network operators in Europe use mid-band spectrum, primarily in the 3.5 GHz band, to deliver reliable, high speed, low latency services to customers in cities and other strategic locations, with low bands such as 700 MHz being used for wider-area 5G coverage.

However, mobile network traffic continues to grow exponentially, doubling every 2 years with a ten-fold increase expected between FY2020 and FY 2030. **Detailed traffic forecasts and projections from Vodafone and other Mobile Network Operators confirm 5G network capacity will become exhausted in Urban areas before the end of this decade.**

While capacity constraints can be theoretically addressed through extreme network densification, the reality is that this would come at a huge cost and require the deployment of an unfeasible number of sites across many indoor and outdoor areas. mmWave bands have also been suggested as a possible solution, but their very limited propagation characteristics would require extreme network densification to achieve any meaningful and consistent levels of coverage, as witnessed by deployments of mmWave spectrum in North America. Additionally, the building and running of all additional sites to cope with capacity will generate a significant increase in energy consumption as well as carbon emissions, which is inconsistent with the EU's green agenda and security interests.

Mid bands provide the ideal characteristics to cost-efficiently add coverage and capacity to Urban areas. With this in mind, **the availability of additional mid-band spectrum in the upper 6GHz band (6425-7125 MHz), which is under consideration for IMT identification in WRC-23 (Agenda item 1.2) - as well as a medium to long-term plan for additional low-frequency spectrum - will be essential to ensure that capacity can meet forecasted growth in mobile data demand, and that the benefits of 5G are enjoyed by all European citizens.**

However, contrary to the very objectives of the Digital Single Market, it is concerning that some Member State authorities appear to be considering different approaches to how the upper 6 GHz band should be harmonised. These appear to be based, among others, on arguments about how total data traffic is split between WiFi and public mobile networks, thereby alleging that allocating additional spectrum for unlicenced use should take precedence over spectrum for public mobile networks.

The reality is that only public mobile networks provide people with connectivity in all areas outside the reach of WiFi, ensuring customers have access to the 'anytime, anywhere' services that they demand. It

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is for this reason that **we would encourage RSPG to pursue a fair and balanced approach, which is consistent with the ambitions of the Digital Single Market and ensures that both fixed and mobile networks have the necessary capabilities to maximise social welfare.**

Based on the above, Vodafone would therefore like RSPG to strongly consider its view on the following three agenda items at WRC-23.

- **WRC-23 agenda item 1.2**: RSPG should support Option 1, namely IMT identification of the 6425-7125 MHz band at WRC-23, and with least restrictive conditions based on ongoing sharing studies

- **WRC-23 agenda item 1.3**: we agree with RSPG's recommendation that there should **mobile allocation on a primary basis in the 3600- 3800 MHz** band at WRC-23

- **WRC-23 agenda item 1.5:** we also encourage RSPG to **support co-primary allocation to mobile services in the band 470-694 MHz**, thereby laying the groundwork to permit the necessary reallocations when reasonable to do so.

As a member of the GSMA and a co-signatory of the "Multi-company response to the Radio Spectrum Policy Group public consultation on the Draft 'Opinion on the ITU-R World Radiocommunication Conference 2023'", we participated in these responses and are fully in agreement with the specific recommendations contained in them.

Further information on the importance of 6GHz for 5G's future, including technical and economic factors, can be found in the following links:

GSMA | The Importance of 6 GHz for 5G's Future - Spectrum

Licensed 6GHz for 5G: An Opportunity for Society (6ghzopportunity.com)

Yours

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