

BREKO response to RSPG Questionnaire on the “Long-term vision for the upper 6 GHz band”

BREKO welcomes the opportunity to submit comments on the “Long-term vision for the upper 6 GHz band” questionnaire which the Radio Spectrum Policy Group has drafted. BREKO believes that the upper 6 GHz band (6425-7125 MHz) plays a vital role in achieving Europe’s digital connectivity targets. However, for this potential to be fully realised, it is crucial to manage relevant spectrum range in an appropriate way and to allow for Wi-Fi also in the upper 6 GHz band.

As the leading German fibre optic association, BREKO successfully advocates for competition in the German telecommunications market. Its 498 members are clearly committed to future-proof fibre optics and are responsible for more than half of the roll-out of fibre optic connections in Germany. In 2022, they invested 4 billion euros for this purpose. BREKO’s members thus impressively illustrate the positive effect that a competitive market with a great variety of companies can have on technological developments.

Please find below BREKO’s answers to the questions of section A:

I) Explain the demand for MFCN or WAS/RLAN in the upper 6GHz band before and beyond 2030

The frequency band in the upper 6 GHz range offers the physical properties to be able to transmit multi-gigabit speeds. In this context, it is paramount to note that, while data traffic increases by around 20% annually, 94% of this traffic transits via fixed networks. Disturbances in Wi-Fi networks due to spectrum shortage will therefore lead to lagging performance and severe impairment in end user experience, whether these end users are private customers, businesses, schools, hospitals, public or community facilities.

Lagging network performance may lead to strategic disadvantages of fixed internet providers offering internet access to end users as compared to those offering mobile access. Distorting effects on competition in telecommunication markets would therefore still have to be examined. Moreover, RSPG members should be aware that WiFi-bottlenecks would invalidate fixed internet access and therefore be a disincentive to investments in fibre optic networks.

To meet the needs of the rising amount of data traffic and connection speeds in the future, the allocation of the upper 6 GHz Band for Wi-Fi and thus for fixed networks use is crucial. More specific demands and use cases will be explained in the following sections.

II) Provide information about the sustainability of the above explained demand, especially the:

1) Environmental impact assessment

Several scientific research studies indicate a significant difference in terms of environmental impact depending on the assignation of the 6 GHz band to fixed or mobile networks. According to these studies, 5G mobile networks are significantly more energy consuming for the same amount of data traffic than FTTH networks.¹ Indeed, current FTTH access networks have been found to consume two and a half times less energy than current cellular/5G mobile networks².

2) Social economic impact

For the foreseeable future, most of the digital use cases - education, work, entertainment, e-health, e-government - occurs indoors (universities, schools, home, office, hospital, airports, etc) and will rely on Wi-Fi. Misallocation of the 6 GHz band may have severe negative consequences on the longer run in terms of its social and economic impacts which should absolutely be avoided.

III) Provide information about:

1) the possible role of the upper 6GHz for MFCN or WAS/RLAN

Wi-Fi technology enables fibre optic speeds to reach the end devices of end customers - provided that the necessary spectrum is available. From a technical point of view, the full use of the 6 GHz band for WIFI is crucial for two main reasons. First, in combination with Wi-Fi 7, it enables many simultaneous users to be supplied with gigabit speeds. Second, Wi-Fi technology in the upper 6 GHz Band enables a smaller number of simultaneous users to be supplied with multi-gigabit speeds via three large 320 MHz radio channels. The first variant is particularly needed for the provision of high-performance connections, for example for accessing learning platforms or business applications, but also for instance access to the Internet and use of applications on university campus, in public areas or on patients' mobile end user devices while staying in hospital. The second is particularly indispensable for the latency-free use of data-intensive applications in the field of reality technologies (augmented reality and virtual reality) in companies, industrial plants and increasingly also in private environments.

With the increase of data traffic exchanges and consumer demand for fast and efficient

¹ Sustainability Benefits of 6 GHz Spectrum Policy, WIK Consult, 31 July 2023. <https://www.wifi.org/system/files/SustainabilityBenefitsof6GHzSpectrumPolicy202307.pdf>

² Köhn et al.(2020) and Nuutinen (2021). Current FTTH access networks have been found to be two and a half times more energy efficient than current cellular/5G mobile

connectivity, allocation of the 6GHz Band for Wi-Fi use will be of the utmost importance to leverage the practical benefits of the ambitious connectivity targets within the EU.

2) use cases, expected deployments (e.g. number of BS for MFCN) and timeframe

The upper 6 GHz band should be allocated for Wi-Fi use as soon as possible to ensure a broad spectrum range for future connectivity use cases.

In this context, it should be borne in mind that the more connectable end devices (Wi-Fi clients) connect to a router (Wi-Fi access point) to send or receive data via Wi-Fi, the slower the transmission becomes. If too many Wi-Fi clients use the same radio channel, they cause interference between each other. In the future, it is safe to assume that the number of Wi-Fi clients - whether in schools or at home - will continue to increase significantly. Against this background, many free radio channels are absolutely essential. The wider the radio channel, the greater the transmission capacity. The upper 6 GHz frequency band, for example, offers several 80 and 160 MHz radio channels. It is essential to allow for the use of these additional Wi-Fi channels in future, given the fact that 94% of data traffic reach the end user via fixed network access. Additional channels are needed particularly in densely populated areas, where many WLAN-Networks in neighbouring flats co-exist on close distance, with about 10 to 20 end user devices per household on average and even more to come. While fixed network access via fibre optic networks constitutes the backbone of our society, WiFi constitutes its arms – the necessary link from access point to end user devices, since only full connectivity of fixed and mobile end user devices in WiFi-networks allows for the full benefits of connectivity experience.

IV) Provide information about standardization and technology impact

Wi-Fi in the 6 GHz band is implemented in many products that are already on the European market (e.g., flagship smartphones, laptops, access points, etc.), but these capabilities are impaired because Wi-Fi access to the upper-6 GHz band is precluded. European consumers pay a premium price for the latest 6 GHz Wi-Fi enabled products with the expectation that they will experience optimal Wi-Fi performance and advanced features, but, without access to the upper-6 GHz frequency band, Wi-Fi cannot support increased data throughput rates, ultra-low and deterministic latencies, better mobility, and high densities of users/devices. Delaying Wi-Fi access to the upper 6 GHz band harms European consumers and impedes technological development.

In our view, allocation of the 6 GHz Band to IMT technologies would mean to put European connectivity at risk: society has taken large efforts in terms of public and private invest in future-proof fibre-optic connections in order to set the stage for future highest connectivity standards in Europe. Limiting spectrum for WiFi-technology today would mean to knowingly force a massive bottleneck and thus hamper the overall network performance, with stronger impacts in terms of limitations and WLAN disturbances in

future, since data consumption and demand for stable and high-performing networks will increase.

We would therefore strongly urge policymakers to provide the higher 6GHz-band for WiFi and to secure connectivity of the 95% of data traffic transmitted via fixed networks. So-called indoor - outdoor hybrid solutions suggest that a sharp indoor – outdoor exclusion of signals is possible. But given that wall attenuation is limited, even low IMT signals may result in indoor disturbances and channel change of WiFi-routers, depending on distance to cell tower and on the amount or lack of construction between WiFi-networks and cell towers. Nevertheless, in areas where fixed access and WiFi networks do not exist – such as recreation areas or other vast public spaces, IMT signals in the upper 6GHz band would add to society's connectivity needs.

Given the huge drawbacks for society and the comparably small amount of data transmitted via mobile networks, any consideration of IMT allocation of spectrum in this band would need to be scrutinised most critically, in particular regarding full use of spectrum currently assigned for IMT, actual spectrum demand and availability of possible alternative spectrum suitable for IMT. Even granted these conditions were met, the overall consequences of insufficient WiFi-spectrum for society would still have to be weighed against the benefits of additional IMT spectrum, taking into account the little share that outdoor data traffic has as compared to indoor data traffic. This approach would be in line with EU regulatory principles, supports economic and social goals, and promotes technological innovation.

Last but not least, those concerned should also be heard in the debate. While interests of many citizens, firms and public entities may be impaired in the long run and thus be affected by RSPG's decision, so far they have not adequately been informed and heard in the decision-making process.

We see this questionnaire as a basis for further dialogue, which we look forward to with interest.