

CEPT Radio Spectrum Policy Group

Re: RSPG Questionnaire on upper 6GHz

Via e-mail: cnect-RPSG@ec.europa.eu

Dear Representative/s,

As the leading provider of Wi-Fi tools, Ekahau appreciates the opportunity to provide comments in response to the Radio Spectrum Policy Group's public consultation questionnaire regarding the upper 6 GHz band usage in Europe. **We believe that unlocking the upper 6 GHz band will be extremely beneficial across Europe. Timely action will ensure Europe remains at the forefront of wireless innovation, enabling businesses and citizens to fully benefit from next-generation connectivity and its associated socioeconomic advantages.**

Ekahau is the global leader in Wi-Fi design, optimization, and troubleshooting solutions, trusted by organizations of every size, including the world's biggest brands and events. Ekahau is part of Ziff Davis, Inc. (NASDAQ: ZD), a leading Internet information and services company consisting of a portfolio of brands that collectively reach more than 240 million people each month. Ekahau is headquartered in Seattle, Washington, US with offices around the globe, including an R&D and Product team based out of Helsinki, Finland.

Surging Demand for Wi-Fi Spectrum Will Continue Before and Beyond 2030

The global demand for Wi-Fi connectivity is surging and will continue to grow beyond 2030. Wi-Fi carries the majority of wireless data traffic, especially indoors, and plays a critical role in today's digital infrastructure across Europe. This trend is expected to continue as new Wi-Fi technologies emerge, enabling enhanced speed, capacity, and latency performance.

The future of a fully connected world will drive continuous spectrum demand, with Wi-Fi supporting an ever-increasing number of devices and applications, such as AI-driven automation, IoT, and industrial processes. Access to the upper 6 GHz band is essential for Wi-Fi to meet these growing connectivity needs.

How 6 GHz Can Boost European Economic Competitiveness and Bridge the Digital Divide

The 6 GHz band enables the deployment of next-generation Wi-Fi technologies, such as Wi-Fi 6E and Wi-Fi 7, which offer faster speeds, lower latency, and increased capacity. This enhanced connectivity can support new applications and services, driving innovation and economic growth across various sectors. Opening the entire 6 GHz band will have a direct impact on GDP via the increased competitiveness of European businesses on a global scale.

Improved Wi-Fi performance can boost productivity in businesses, schools, hospitals, and other organizations by enabling faster data transfer and seamless collaboration. This can lead to increased output, cost savings, and improved service delivery.

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Expanding access to high-quality Wi-Fi can help bridge the digital divide by providing more reliable and affordable internet access to underserved communities. This can create new opportunities for education, employment, and social participation, promoting greater social and economic inclusion.

Allocating the entire 6 GHz band for WAS/RLAN ensures that there is sufficient spectrum available to meet the growing demand for wireless connectivity in the coming years. This future-proofs the wireless infrastructure and enables sustained socioeconomic benefits in the long term.

Limitations of 6 GHz Without Unlocking the Upper Band

Wi-Fi 6E and Wi-Fi 7 standards require access to the entire 6 GHz band, including the upper portion (6425-7125 MHz), to fully capitalize on their potential and enable the deployment of high-performance, gigabit-speed wireless enterprise networks. The upper 6 GHz band significantly increases network capacity and reduces latency in dense environments such as offices, schools, hospitals, stadiums, airports, and smart cities.

Optimal performance in enterprise-grade, building-wide Wi-Fi networks relies on a sufficient number of non-overlapping channels to minimize interference. Limited channels lead to interference, lower data rates, and higher latencies due to contention and retransmissions. While reducing transmission power can mitigate interference, it may cause coverage issues and reduce data rates.

Countries with access to the entire 1200 MHz of the 6 GHz band have observed reduced congestion and substantial performance improvements. In contrast, Europe currently only allows access to the lower 6 GHz band (5925-6425 MHz), providing significantly fewer non-overlapping channels, hindering the deployment of well-performing networks. Based on Ekahau's practical experience from real networks, a proper channel plan typically requires at least 10 independent channels for optimal performance and minimal interference.

	# of 40 MHz channels	# of 80 MHz channels	# of 160 MHz channels	# of 320 MHz channels
Whole 6 GHz band	29	14	7	3
Lower band only (Europe)	12	6	3	1
Max data rate (Wi-Fi 7 2-streams)	688 Mbps	1441 Mbps	2882 Mbps	5764 Mbps

Two important observations can be made:

1. In Europe, due to shortage of channels, the majority of enterprise Wi-Fi networks are currently deployed using 40 MHz channel bandwidth more frequently than in

other economies that allow access to the entire 6 GHz band (which use 80 MHz channels). This is highlighted with green color above. The limitation prevents users in Europe from achieving gigabit-level data rates over wireless networks, even in theory.

2. In Europe, while it is possible to deploy a Wi-Fi 7 communication link using maximum data rates with 320 MHz, this cannot be done without causing interference to other access points in close proximity. As a result, the use cases for such high-speed communication are primarily limited to residential (home) environments. In other economies, multi-access point networks can be deployed using 320 MHz channels more successfully.

In summary, it can be concluded that the lower 6 GHz band (5945-6425 MHz) alone does not provide sufficient spectrum to support the goals outlined in the EU's Gigabit Infrastructure Act and the Digital Decade Policy Programme 2030 for all indoor scenarios. To fully realize the potential of gigabit-speed wireless networks and meet the growing connectivity demands across various industries and use cases, access to the entire 6 GHz band is essential.

Standardization and Technology Impact

Standardization is crucial for the development, adoption, and success of Wi-Fi technology. Its impact spans multiple aspects, including interoperability, innovation, market growth, and global economic influence. However, when it comes to enabling WAS/RLAN in the upper 6 GHz band, no further technology standardization is necessary. The key technologies required for immediate deployment are already in place.

The upcoming IEEE 802.11be standard, also known as Wi-Fi 7, is set to introduce Extremely High Throughput (EHT) capabilities, offering speeds that could potentially exceed 30 Gbps. This standard will also bring improved efficiency and new features such as 320 MHz channel support and multi-link operation, further enhancing the performance and flexibility of Wi-Fi networks.

As the Wi-Fi ecosystem continues to evolve, it is essential for regulatory bodies to ensure that sufficient spectrum, including the upper 6 GHz band, is made available to support the growth and innovation of wireless technologies.