



Hewlett Packard
Enterprise

Response to the Public Consultation on the ‘Work Programme for 2024 and beyond’ issued by the Radio Spectrum Policy Group (RSPG)

30th November 2023

Introduction

Hewlett Packard Enterprise (HPE) is grateful for the opportunity to respond to the Public Consultation on the '*Work Programme for 2024 and beyond*' issued by the Radio Spectrum Policy Group (RSPG) on 30th October 2023.

HPE is a global technology leader focused on developing intelligent solutions that allow customers to capture, analyze and act upon data seamlessly from edge to cloud. Its Aruba Networking division is a global leader in Enterprise Network and Mobility Solutions and the world's second largest provider of Enterprise Class Wireless Access Points. In 2021, HPE Aruba Networking was the first company world-wide to commercially launch an enterprise-grade 6 GHz Wi-Fi Access Point. With the acquisition in June 2023 of Italy-based company Athonet, a leading provider of Private 5G network solutions we further extended our managed connectivity, Secure Access Service Edge (SASE), and edge compute portfolios which enables us to address the private networking needs of both enterprises and telecom network operators even better.

HPE has led society's digital transformation since the very beginning, as one of the founders of Silicon Valley in 1939. Present in Europe for over fifty years, we work with European businesses and organisations to capture, analyse, and act upon data to accelerate business growth and modernise public administrations. HPE is deeply vested in the EU's ambitious digital and green transformations, from SMEs to the public sector, underpinned by strong privacy rules, targeted R&I investment, support for science, and a multistakeholder approach that sustains Europe's openness to innovation and responds to market needs.

HPE is present in all European countries, operating eight innovation centres in the region and manufacturing liquid cooled supercomputers and servers for data driven organizations. HPE Europe employs one third of HPE's global workforce of more than 60,000 employees.

HPE comments to the RSPG's Public Consultation

General

HPE commends the RSPG for its continued efforts to harmonize and modernize European spectrum regulations. We trust that in its '*Work Programme 2024 and beyond*' the RSPG will acknowledge the needs of all spectrum users by promoting technology neutrality and spectrum sharing methods which will enable a more responsible and efficient use of spectrum to the benefit of European society.

Our response focuses on the two proposed work areas '*Long-term vision for the upper 6 GHz band (2030 and beyond)*' and '*6G strategic vision*'.

HPE comments on the RSPG '*Long-term vision for the upper 6 GHz band (2030 and beyond)*'

HPE considers the 6 GHz band to be crucial for addressing wireless connectivity needs in the enterprise networking domain and therefore supports the RSPG in its ambition to set the regulatory conditions for an efficient, meaningful, and timely usage of the upper 6 GHz band.

We are of the opinion that, considering the interest in having the upper 6 GHz band made available for licence-exempt use expressed not only by industry but by many European administrations, and in the light of the studies on the future use of the upper 6 GHz band that are currently being undertaken by CEPT and national administrations, the RSPG should also develop a short- and medium-term strategy to enable additional uses of the upper 6 GHz band in the 2024-2030 timeframe.

A key objective of the European Digital Decade Policy Programme (DDPP) is that by 2030 "*all end users at a fixed location should be covered by a gigabit network up to the network termination point and all populated areas should be covered by a next-generation wireless high-speed network with performance at least equivalent to that of 5G.*"

To deliver on the objective of a true European gigabit society, the RSPG should make recommendations to ensure that until 2030 all European citizens not only have the possibility to connect to a gigabit fibre network but also to actually enjoy gigabit connectivity on their terminal devices, the vast majority of which are located indoors and connected through Wi-Fi.

In defining its objectives and work programme, RSPG should also take into account aspects such as data traffic evolution, short- and medium-term spectrum needs, technology readiness, energy efficiency, security of supply, data security and ownership, and affordability.

Evolution of data traffic

Many experts question the validity of the mobile traffic projections presented by the IMT industry and the need for additional spectrum for Wireless Broadband Electronic Communications Services (WBB ECS) / IMT in the upper 6 GHz band¹.

Statistics published by administrations in Germany, France, Spain, the UK, and other countries show that mobile network traffic accounts for 3-10% of all data traffic, while fixed network traffic accounts for 90-97%. With 70-80% of mobile traffic being generated or terminated indoors², outdoor mobile traffic accounts for a mere 0.6% to 3% of total data traffic.

There are no indications that mobile traffic, particularly outdoors, will increase significantly during the next years, as 90% of AR/VR/HD video usage which is typically presented as capacity-hungry IMT use case will occur indoors and be handled by Wi-Fi. Even optimistic forecasts such as the recent one developed by Arthur D. Little for the GSMA project the share of mobile traffic in Europe to reach just 17% of total traffic by 2030³. Outdoor capacity bottlenecks which are frequently cited as another major reason to get the upper 6 GHz band allocated to IMT only occur in very small geographical areas and only during very limited periods of time. These bottlenecks can be overcome by better utilizing existing mid-band spectrum available to WBB ECS/IMT.

For WBB ECS/IMT, multiple alternatives exist in the mid-range and millimeter wave spectrum bands. In mid-band, existing WBB ECS/IMT allocations are still heavily underutilized, according to the 5G Observatory Report⁴. In June 2023, the European Telecommunications Network Operators' Association (ETNO) reported that while 5G coverage had reached 73% of the European population, 5G take-up stood at only 19%⁵.

HPE expects the biggest growth potential for 5G to be in the 'Verticals' segment where private 5G (P5G) networks will be deployed to address enterprises' need for outdoor coverage and mobility. We are optimistic that the European Commission's efforts to harmonize the 3800-4200 MHz band for that purpose will be successful and that P5G networks will be operating predominantly in that band where they will complement Wi-Fi enterprise networks operating in the 6 GHz band.

Short- and medium-term spectrum needs

Whilst somewhat disregarded initially, there is now a common understanding that the multi-gigabit fibre connections available to European households by 2030 will have to be complemented by adequately fast indoor wireless connectivity solutions which in turn will require a sufficient amount of spectrum to be available.

The upper 6 GHz band is the only remaining spectrum that is suitable for supporting the projected strong growth of fixed network traffic of which an estimated 90% will be transferred over Wi-Fi. The latest generations of Wi-Fi (Wi-Fi 6E and Wi-Fi 7) are designed to deliver maximum performance with multiple non-overlapping wide (i.e., 160 MHz or 320 MHz) channels which can only be achieved if the entire 5945-7125 MHz band is made available for licence-exempt access use.

While having multiple non-overlapping 320 MHz-wide channels is expected to be of high importance only for certain enterprise use cases where very large volumes of data must be transferred within a very short time and with minimum latency (e.g., in large healthcare facilities), availability of a large number of non-overlapping channels of 40, 80, and 160 MHz width is essential for delivering high user data rates at low latency in dense deployments such as universities, schools, hospitals, logistics facilities, and large public venues. In countries that have already made the entire 6 GHz band available for licence-exempt use, we are seeing major Wi-Fi 6E deployments in these sectors, and many of our European enterprise customers are eagerly waiting for the entire 6 GHz band to become available for licence-exempt use.

Technology readiness

Wi-Fi 6E is a mature technology. A large 6 GHz Wi-Fi ecosystem exists today (more than 2000 devices from access points to smartphones, tablets, laptop and desktop PCs to TV sets had been certified by mid-2023) but European users can exploit only a portion of their capabilities. Official Wi-Fi 7 certification will be available before the end of Q1 2024; first products already entered the market. In its Annual Industry Report 2023, the Wireless Broadband Alliance (WBA) found that 53% of

¹ https://www.linkedin.com/posts/deanbubley_wrc23-5g-spectrum-activity-7128827661589602307-lwE5/;
https://www.linkedin.com/posts/william-webb-065640b_current-forecasts-for-mobile-demand-growth-activity-7130159461356199938-SZRw/

² <https://www.ericsson.com/en/blog/2021/11/delivering-consistent-high-performance-indoor-5g-experience>

³ Arthur D. Little: The Evolution of Data Growth in Europe, Report 2023

⁴ <https://5gobservatory.eu/observatory-overview/observatory-reports/>

⁵ ETNO: Review of 5G Progress to date, CEPT Workshop 6G – 29 June 2023

service providers, technology vendors and enterprises have deployed Wi-Fi 6, and an additional 44% said they are currently working to adopt Wi-Fi 6E in the next 12-18 months. Further, 33% of those respondents confirmed that they already have plans to deploy Wi-Fi 7 by the end of 2024⁶.

By way of contrast, there is no ecosystem for 6 GHz WBB ECS / IMT, and judging from the demonstrations of 6 GHz IMT prototypes given by various mobile network operators over the past months, it would take years before 6 GHz IMT equipment would be mature enough for deployment.

Energy efficiency and sustainability

Various studies found that fibre, and specifically FTTH, in combination with Wi-Fi is the most energy efficient solution to provide users with gigabit connectivity.

With RF wall attenuation of modern thermally insulated buildings easily exceeding 50 dB, there is no point in trying to provide indoor coverage from outdoor high-power licenced mobile base stations.

Establishing two parallel connectivity infrastructures, one that is energy efficient (FTTH plus Wi-Fi) and one that is not (IMT macro cells) to serve the same user groups (business and consumers predominantly in urban areas) would be highly inefficient and grossly contradict Europe's sustainability goals.

Security of supply

Unlike the public mobile / IMT ecosystem which is dominated by a few big international corporations, the Wi-Fi ecosystem is characterized by a large and diverse global vendor base, something that is particularly important for small and medium-sized enterprises (SMEs) as it provides for choice, security of supply, competitive prices, and, last but not least, innovation. Representing 99% of all businesses in the EU, SMEs are the backbone of Europe's economy⁷.

Affordability

Besides ease of installation and network and data sovereignty, Wi-Fi is characterized by its superior cost-performance ratio compared to, for instance, IMT. With chipset prices typically an order of magnitude lower than those of IMT 5G⁸, Wi-Fi makes high-speed and reliable communications affordable for businesses and consumers.

Frank Fitzek, Head of the 'Deutsche Telekom Chair of Communication Networks' at the Technical University of Dresden is quoted to have said at a recent 6G Summit in New York: *"Never forget Wi-Fi. They have something that 5G will never have: lower cost."*⁹.

HPE comments on the RSPG '6G strategic vision'

6G constitutes the next step in the evolution of mobile networks and is expected to benefit from further advances in technology, enabling major improvements in terms of performance, sustainability, inclusion, and trustworthiness. 6G connectivity use cases are transitioning away from wide-area, ubiquitous coverage and onto virtualization, edge computing and automation for the enterprise.

While HPE agrees that Europe shall define its strategic vision on 6G spectrum needs, we believe that those needs can and should only be assessed once a clear definition of '6G' and a good and realistic understanding of use cases and user benefits exist, and that an identification of '6G pioneer bands' should be part of a '6G long term-vision for 2030 and beyond' to be developed by the RSPG during the coming years, and considering the outcome of WRC-27 which is expected to decide on bands in the 7-20 GHz range to be potentially identified for the IMT flavour of 6G.

⁶ <https://www.rcrwireless.com/20231121/fundamentals/reliability-over-throughput-a-wi-fi-7-update>

⁷ https://single-market-economy.ec.europa.eu/smes_en

⁸ <https://scet.berkeley.edu/the-impact-of-5g-on-existing-internet-systems/>

⁹ <https://www.lightreading.com/6g/6g-summit-brings-unusual-plea-from-carriers-slow-your-roll>

Summary

In our view, making the future use of the upper 6 GHz band the exclusive subject of a long-term '2030 and beyond' vision would unnecessarily delay licence-exempt access to the band, impede technological development and innovation, and harm European businesses and consumers.

Considering market demand, user benefits, and other key aspects outlined above, the RSPG should develop a short- and medium-term strategy to enable additional uses of the upper 6 GHz band in the 2024-2030 timeframe.

A long-term RSPG vision for the upper 6 GHz band should focus on enabling WBB ECS/IMT to share spectrum with WAS/RLAN and incumbent users of the band and abandoning the concept of exclusive wide-area licenses for WBB ECS/IMT.

Concerning the identification of '6G pioneer bands', the RSPG should develop a '6G long term-vision for 2030 and beyond' which includes a clear definition of '6G' and a good and realistic understanding of use cases and user benefits and takes into account the results of WRC-27.

HPE contact information

In case of questions please do not hesitate to contact any of the HPE representatives listed below:

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