Dynamic Spectrum Alliance Limited
http://www.dynamicspectrumalliance.org

September 8, 2025

Nemzeti Média- és Hírközlési Hatóság (NMHH)
Esztergomi út 9,
1133 Budapest,Hungary
konzultacio2025@nmhh.hu

Re: Nyilvános meghallgatás a vezetéknélküli szélessávú szolgáltatások nyújtására használható frekvenciasávokkal kapcsolatban

Dear Sir/Madam,

The Dynamic Spectrum Alliance[1] (DSA) welcomes the opportunity to contribute to the National Media and Infocommunications Authority's (NMHH) public consultation on the future use of the 6 GHz band. The 6 GHz band presents a rare and transformative opportunity to accelerate Hungary's digital ambitions. With a total allocation of 1200 MHz (5925–7125 MHz), this mid-band spectrum is crucial in addressing the exponential growth in data consumption driven by networks supporting residential, enterprise, educational, healthcare, and industrial sectors. Globally, forward-looking regulators—including those in the United States, Canada, Brazil, Saudi Arabia, and South Korea—have recognized this potential by opening the entire 6 GHz band for unlicensed access, enabling next-generation Wi-Fi technologies such as Wi-Fi 6E and Wi-Fi 7.

The DSA strongly urges NMHH to adopt a similarly comprehensive approach by enabling full access to the entire 6 GHz spectrum on a license-exempt basis. This will unlock vast economic, social, and technological benefits by fostering a robust device ecosystem, promoting competition and innovation, and ensuring consumer affordability. Crucially, incorporating Automated Frequency Coordination (AFC) to govern higher power (standard power) operation will facilitate rural broadband deployment, support smart city infrastructure, and empower local enterprise networks, all while guaranteeing protection for incumbent licensed users via advanced interference management techniques.

Aligning Hungary's regulatory framework with internationally recognized standards—such as IEEE 802.11ax and 802.11be—and harmonizing with CEPT and ETSI processes will further optimize device availability, cost efficiencies, and cross-border spectrum coordination within Europe. The result will be a future-proof, flexible, and resilient digital connectivity foundation that substantiates Hungary's leadership in the European digital economy.

Moreover, opening the full 6 GHz band can generate substantial socio-economic dividends by boosting digital inclusion, driving SME competitiveness, enabling Industry 4.0 applications, and contributing to sustainable development objectives. As digital transformation remains a top national priority as outlined

---

[1]The DSA is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all. Our membership spans multinationals, small-and medium-sized enterprises, as well as academic, research and other organizations from around the world all working to create innovative solutions that will benefit consumers and businesses alike by making spectrum abundant through dynamic spectrum sharing. A full list of DSA members is available on the DSA's website at: https://www.dynamicspectrumalliance.org/members.

in Hungary's Radio Spectrum Strategy 2021–2025, ensuring optimal spectrum policies today is paramount to achieving that vision.

The DSA stands ready to support NMHH with technical expertise and international best practices to realize the full potential of the 6 GHz band for Hungary's citizens, businesses, and future generations.

Sincerely,

Dr. Martha Suárez
President
Dynamic Spectrum Alliance

1. Technical and Policy Considerations

1.1 Importance of the Full 6 GHz Band (5925–7125 MHz)

- **Gigabit Wi-Fi with Ultra-Low Latency**

  Allocating the full 6 GHz band enables Wi-Fi networks to utilize ultra-wide channels (160 MHz and 320 MHz), delivering multi-gigabit-per-second speeds with ultra-low latency. This exceptional performance supports bandwidth-intensive applications such as seamless 4K and 8K video streaming for remote education and entertainment, real-time telemedicine consultations with high-resolution imaging, and immersive augmented and virtual reality (AR/VR) experiences that enhance training and collaboration. Additionally, it powers latency-sensitive services like cloud gaming and autonomous industrial operations. Critically, these capabilities enable reliable connectivity for smart city infrastructures—including intelligent transportation systems, public safety networks, and IoT sensor grids—functioning at scales and performance levels unattainable with legacy, narrower-band spectrum allocations.

- **Long-Term Spectrum Efficiency and Policy Stability**

  Comprehensive allocation of the full 6 GHz band prevents early spectrum congestion and maximizes long-term spectrum efficiency by providing regulators and operators with flexible channel selection and bonding options. It enables networks to dynamically manage interference and optimize throughput across various deployment scenarios and topographies. Crucially, a full-band approach grants regulatory certainty and stability, avoiding the need for disruptive, piecemeal future reallocations that inject uncertainty and delay commercial investment. Industry stakeholders require this confidence to commit the significant resources necessary for large-scale public and private broadband deployments that underpin digital infrastructure.

- **Economic and Consumer Benefits**

  With full access to ultra-wide channels, Wi-Fi networks can deliver multi-gigabit speeds, ultra-low latency, and support dense, multi-user environments essential for modern applications. These include immersive augmented and virtual reality for remote training and education, real-time telemedicine with high-resolution video and imaging, and highly resilient smart city platforms integrating critical public infrastructure services.
  Broad availability of high-performance Wi-Fi also catalyzes digital entrepreneurship by enabling a diverse ecosystem of small and medium enterprises to innovate in service delivery, content creation, and specialized applications. This ecosystem stimulation ultimately drives economic diversification and broad-based growth.

1.2 Standard Power Use and AFC-Enabled Operation

- **Bridging Connectivity Gaps in Rural and Underserved Areas**

  While Low Power Indoor (LPI) and Very Low Power (VLP) devices serve important roles in homes and enterprises, limiting spectrum use to these categories inherently restricts coverage and capacity—especially for rural, peri-urban, and underserved communities. Without the ability to utilize Standard Power (SP) devices outdoors, these populations risk being excluded from affordable, high-capacity broadband solutions.

  Enabling SP operation, governed by AFC, empowers Wi-Fi networks to extend coverage significantly beyond the confines of indoor spaces. This facilitates the delivery of reliable, high-speed broadband to critical community access points such as schools, healthcare facilities, small businesses, and public hubs. Particularly in areas lacking extensive fiber or cellular infrastructure, SP with AFC represents a cost-effective strategy to bridge the digital divide.

- **Automated Frequency Coordination: The Key Enabler**

AFC is a sophisticated, database-driven system that dynamically manages spectrum access for SP devices, ensuring coexistence with incumbent services that have priority rights on the 6 GHz band. AFC verifies the geographic location and operating parameters of each SP access point, cross-referencing with a centralized registry of incumbent users to authorize channels and power levels in real-time. By adopting AFC, Hungary can:

- ✓ **Expand Last-Mile Broadband Reach:** Enable reliable service delivery in rural and peri-urban zones where other network infrastructure is sparse or cost-prohibitive, fostering inclusive digital access.
- ✓ **Accelerate Smart City and Public Service Innovations:** Support deployment of outdoor Wi-Fi networks crucial for public connectivity, municipal services, intelligent transport systems, environmental sensing, and Internet of Things (IoT) ecosystems.
- ✓ **Stimulate Private Sector Investment:** Provide the regulatory clarity and technical safeguards necessary to inspire confidence among internet service providers, technology innovators, and equipment manufacturers, catalyzing diverse, large-scale network rollouts.

Moreover, AFC's dynamic coordination mechanism mitigates interference and optimizes spectrum utilization, enabling denser deployments and higher user capacities to support emerging industry verticals and advanced applications.

In summary, embracing SP use underpinned by AFC positions Hungary to deliver widespread, resilient, and future-proof wireless connectivity—advancing socioeconomic development and catalyzing innovation across multiple sectors.

1.3 Harmonization with International Standards

Harmonizing Hungary's regulatory framework with internationally recognized standards is essential to fully leverage the potential of the 6 GHz band while fostering a competitive and innovative wireless ecosystem. The IEEE 802.11ax (Wi-Fi 6E) and IEEE 802.11be (Wi-Fi 7) standards serve as foundational global benchmarks for next-generation Wi-Fi technologies, enabling ultra-high throughput, ultra-low latency, and enhanced network efficiency through wider channel widths (up to 320 MHz), multi-link operation, and advanced spatial multiplexing. Aligning with technical and regulatory conditions developed by CEPT (European Conference of Postal and Telecommunications Administrations) and ETSI (European Telecommunications Standards Institute) ensures that Hungary benefits from harmonized spectrum use across Europe. CEPT and ETSI provide standardized technical specifications that enable efficient and fair spectrum sharing, protection of incumbent users, and cross-border interoperability in the 5925–6425 MHz lower 6 GHz band and the upper 6 GHz band, currently under study. This harmonization yields multiple benefits:

- **Seamless Device Interoperability**: Devices certified under common standards can operate across borders without modification, facilitating a unified market and consumer convenience.
- **Economies of Scale & Reduced Costs**: Common standards reduce fragmentation, lower manufacturing costs, and expand device availability, accelerating adoption by consumers and enterprises.
- **Regulatory Certainty & Innovation**: A stable, harmonized policy environment encourages investment, supporting rapid deployment of advanced broadband solutions and fostering a vibrant innovation ecosystem.

Conversely, diverging from these harmonized standards risks market fragmentation, reduced device availability, increased costs, and diminished competitiveness in the European digital market. NMHH's commitment to continued engagement with CEPT and ETSI processes will ensure that Hungary's 6 GHz spectrum regulations remain aligned with European and global best practices, facilitating successful Wi-Fi 6E and Wi-Fi 7 deployments and maximizing socio-economic benefits for the nation.

1.4 Coexistence with Incumbent Services in the upper 6 GHz band

At the 2023 World Radiocommunication Conference (WRC-23), the 6425–7125 MHz range—referred to as the upper 6 GHz band—was identified for International Mobile Telecommunications (IMT) in ITU Region 1, which includes Europe. This identification does not confer priority to IMT under the Radio Regulations (RR) and does not preclude the continued operation of other services to which the band is allocated. RR Footnote 5.457E further specifies that the 6425–7125 MHz band must also remain available for Wireless Access Systems (WAS), including Radio Local Area Networks (RLAN).

The 6425–7125 MHz band in Hungary is primarily allocated to both civil and non-civil applications—such as fixed point-to-point links and satellite services—and is subject to specific usage restrictions and transitional arrangements

Sharing between Wi-Fi (WAS/RLAN) and incumbent Fixed Service (FS) and Fixed Satellite Service (FSS) in the 6425-7125 MHz band is generally feasible when technical parameters such as power limits, antenna heights, and bandwidth management and deployment constraints are properly applied.[2] Key factors include limiting Wi-Fi device power (typically up to 250 mW indoors and 1 W outdoors), focusing mostly on indoor use, considering building attenuation, and controlling device density and activity. Studies show that with these conditions, interference levels remain below harmful thresholds for FS and FSS receivers, supporting coexistence without significant performance degradation. Overall, coexistence is achievable with measured regulatory and technical frameworks.

In addition, U.S. FCC has implemented rules requiring AFC for standard-power devices and restricting VLP devices across the entire 6 GHz band, specifically to safeguard incumbent services.[3] An extensive deployment study at the University of Michigan shows dense indoor Wi-Fi 6E networks (LPI) have negligible interference to fixed incumbents, reinforcing the reliability of license-exempt use.[4]

In contrast, IMT systems have no equivalent sharing mechanism in the 6 GHz band and rely on wide-area, high-power base stations that often necessitate the costly relocation of incumbents or the creation of exclusion zones.[5] This makes IMT deployments far less compatible with coexistence objectives, compared to Wi-Fi deployments that can adapt seamlessly via AFC.

Evidence from early implementations in the United States and Canada confirms that AFC-enabled Wi-Fi not only safeguards incumbent services but also enables robust broadband expansion, particularly for outdoor hotspots, rural connectivity, and enterprise deployments. By adopting this proven model, Hungary can establish a globally harmonized framework that ensures spectrum efficiency, protects incumbents, and supports inclusive digital growth.

1.5 Socio-Economic Impact

- **Economic Growth**: Unlocking the full 6 GHz band and enabling standard power with AFC is not simply a technical choice—it is a socio-economic imperative. Globally, Wi-Fi contributes over $5 trillion annually to economic output[6], and its impact is most profound for small and medium enterprises (SMEs), local entrepreneurs, and digital startups. By lowering the barriers to affordable broadband deployment, license-exempt spectrum empowers Hungary's SMEs to compete in e-commerce, digital services, and creative industries, directly contributing to job creation and economic diversification.

[2] https://docdb.cept.org/download/4772

[3] https://www.federalregister.gov/documents/2025/03/06/2025-02962/unlicensed-use-of-the-6-ghz-band-expanding-flexible-use-in-mid-band-spectrum-between-37-and-24-ghz

[4] https://arxiv.org/abs/2307.00235

[5] https://dynamicspectrumalliance.org/wp-content/uploads/2022/08/DSA-IMT-RLAN_6425-7125MHz-EU_Study-August-2022.pdf

[6] https://www.wi-fi.org/system/files/Economic_Value_of_Wi-Fi_Highlights_202305.pdf

- **Digital Inclusion**: Equally important, public institutions such as schools, hospitals, and community centers stand to gain from affordable, high-performance Wi-Fi. Expanded access ensures that students in underserved areas can participate in online learning, rural clinics can conduct telemedicine consultations, and citizens can engage with e-government services. These benefits directly advance Hungary's goals of digital inclusion and equitable development.
- **Innovation Leadership**: Enabling the full 6 GHz band also fosters innovation leadership by supporting next-generation applications. High-capacity Wi-Fi networks can power immersive AR/VR learning environments, real-time telemedicine with advanced imaging, smart manufacturing processes, and intelligent transportation systems—all of which are central to Hungary's Industry 4.0 aspirations. Moreover, Wi-Fi serves as a critical complement to 5G networks: by offloading mobile traffic, Wi-Fi reduces strain on licensed spectrum, lowers user costs, and ensures that connectivity is both accessible and sustainable.

2. DSA Recommendations

To fully capture the socio-economic opportunities of the digital era, Hungary's 6 GHz policy must go beyond technical spectrum allocation and embrace a bold vision for inclusion, innovation, and European leadership; by doing so, Hungary can maximize long-term spectrum efficiency, ensure global and regional interoperability, and deliver transformative benefits to its citizens, businesses, and communities—advancing the objectives set out in the National Digitalisation Strategy, supporting broad-based economic growth, narrowing the digital divide, and reinforcing Hungary's role as a regional leader in digital transformation.

2.1 Open the Full 6 GHz Band to License-Exempt Use

Hungary should open the entire 6 GHz band, aligning with global leaders such as the U.S., Canada, South Korea, and Saudi Arabia. Full-band access maximizes spectrum efficiency, enables ultra-wide channels for Wi-Fi 6E and Wi-Fi 7, and secures access to the broadest, most cost-effective global device ecosystem. This approach prevents market fragmentation, attracts investment, and provides a future-ready infrastructure for Hungary's fast-growing digital economy.

2.2 Enable Standard Power Outdoor Deployments with AFC

By authorizing AFC enabled standard power Wi-Fi, Hungary can extend affordable, high-capacity broadband to rural, peri-urban, and underserved communities while protecting incumbent services. This is essential for supporting outdoor public Wi-Fi, smart city projects, and sectoral applications in healthcare, education, logistics, and manufacturing—ensuring every region participates in Hungary's digital transformation.

2.3 Retain and Expand LPI and VLP Access

Permitting flexible, license-exempt access for LPI and VLP devices will power homes, small businesses, and enterprises with robust, affordable connectivity. This flexibility supports widespread adoption of hybrid work, digital education, e-commerce, and enterprise innovation throughout Hungary.

2.4 Build Regulatory Flexibility and Future-Proofing Mechanisms

To ensure Hungary remains agile amid rapid technology evolution, the regulatory framework should include provisions for regular review, stakeholder consultation, and alignment with global best practices. This adaptive policy approach safeguards regulatory relevance and positions Hungary to swiftly benefit from advances like Wi-Fi 8, IoT expansion, and emerging spectrum-sharing technologies.

2.5 Promote Industry Collaboration and Capacity Building

Hungary should foster strong public-private sector collaboration in device certification, coexistence testing, and skills development. This will accelerate safe, effective adoption of 6 GHz Wi-Fi, support local manufacturing and digital entrepreneurship, and reinforce Hungary's role as a regional leader in innovative spectrum policy and digital services.

3. Conclusion

The 6 GHz band offers Hungary a transformative opportunity to fast-track its digital future, strengthen economic resilience, and demonstrate leadership in progressive spectrum policy within Europe. By making the entire 1200 MHz available for license-exempt use, authorizing standard-power operations through AFC, and preserving flexible access for LPI and VLP devices, Hungary can design a spectrum strategy that is both forward-looking and inclusive.

This comprehensive approach will unlock tangible benefits—delivering multi-gigabit broadband to homes and enterprises, extending affordable connectivity to underserved communities, and powering advanced use cases such as smart cities, Industry 4.0, and digital public services. At the same time, it will align Hungary with global leaders in digital policy, foster a competitive innovation ecosystem, and empower local entrepreneurs to build new services on a resilient, high-capacity connectivity foundation.

The DSA remains committed to partnering with the NMHH and relevant stakeholders by providing technical insights, sharing global experiences, and supporting effective regulatory implementation. With these steps, Hungary can not only achieve its near-term connectivity ambitions but also secure a lasting position at the forefront of digital inclusion, innovation, and economic growth.