HÉT Spectrum Management Working Group responses to RSPG Questionnaire on Long-term vision for the upper 6 GHz band

To:

Radio Spectrum Policy Group (RSPG)
European Commission
RSPG Secretariat
CNECT-RSPG@ec.europa.eu

Reference:

Questionnaire on long-term vision for the upper 6 GHz band

Respondent:

HÉT Spectrum Management Working Group (HÉT Spectrum WG)

Dear RSPG,

The members of the HÉT Spectrum Management Working Group (HÉT Spectrum WG), delegated by the member companies of HÉT is a professional advisory and decision-preparation body in Hungary, which supports the activities of the General Assembly and the Presidency of HÉT and the Hungarian NRA (NMHH) on a professional basis. The HÉT Spectrum WG deals with topics related to spectrum management that affect the common interests of the wireless industry. HÉT Spectrum WG is a recognized professional partner of NMHH in spectrum management issues, is open to answering inquiries from NMHH, ETNO, GSMA, RSPG, EU and the wireless industry as well.

HÉT Spectrum WG thanks the RSPG for the opportunity to respond to its "Questionnaire on long-term vision for the upper 6 GHz band". MFCN can deliver optimal public benefit in terms of socio-economic impact and efficiency of spectrum utilisation in the upper 6 GHz band.

- 6 GHz capacity is required to meet increasing customer demand at speeds outlined in the International Telecommunication Union's vision for 5G, as well as future evolution.
- Mobile networks are already densified, but 6 GHz can enable the growth of sustainable mobile capacity on existing macro-cell sites.
- Timely availability of 6 GHz, at reasonable conditions and price, will drive cost-efficient network deployment, help lower the broadband usage gap and support digital inclusion.
- Mobile networks will need, on average, 2 GHz of mid-band spectrum per country by 2030. This is challenging to achieve.
- The 6 GHz band at 6.425-7.125 GHz should be made available for licensed, standard power, macro-cell mobile.

Please find below HÉT Spectrum WGs responses:

A. Questions directed to the MFCN and the WAS/RLAN stakeholders:
Please limit your answers to maximum 4-5 pages and favour responding through associations as far as possible.

The RSPG intends to build a long-term vision for the upper 6 GHz band by providing policy recommendations on how to best organise the future use of this band in Europe with the goal to maximise the contribution of this part of spectrum to the achievement of digital connectivity targets for Europe, as laid down in the Digital Decade Policy Programme 2030 (DDPP)5. The DDPP highlights the importance of connectivity infrastructure and accordingly sets political targets for 2030, including for the deployment of networks with gigabit speeds. 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. In this context, please answer the following questions:

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

HÉT Spectrum WG has members both from the MFCN industry and also from the incumbent WAS/RLAN users.

In Hungary the yearly mobile data growth rate is continuously in the range of 25% to 30% in the recent years, meaning we can assume that by Eo2030 the average data consumption of data users will be five times higher, than in 2024. This leads to the fact that existing spectrum resources most probably will be blocking further development in the mobile industry, especially taking into account the next generation 6G. Further spectrum – both sub GHz and above 3,5 GHz – has to be allocated to the mobile industry, taking into account existing needs of the WAS/RLAN industry/providers.

Both Deutsche Telekom Group and Vodafone Group performed real environment tests in the upper 6 GHz band that performed comparably to 3.5 GHz. 4iG Group and Budapest University of Technology and Economics were the first in Hungary to jointly test data transmission equipment operating at the 6GHz frequency. In the following years the 3.5 GHz is planned to be heavily used for provision of mobile connectivity indoors as well as outdoors, and after 2028/2030 the 6 GHz is expected to be as well. Overall, the group trials showed the viability of upper 6 GHz for macro rollout, indoor service provision and coverage in a close equivalence to 3.5 GHz.

What might happen beyond 2030 is a matter of believes, though with the emerge of 6G, new use cases, exponential growth in virtualization, cloudification, IoT, hologram, etc. it cannot be assumed that the growth rate declines.

In the contrary WAS/RLAN providers already implementing WiFi6 and WiFi6E, and sure there will be further demands in households for even higher throughputs of FTTH (GPON, xGPON) endpoints. Still t he availability of an additional 500 MHz of spectrum for unlicensed use in the lower 6 GHz band (5.925-6.425 GHz), representing roughly a doubling of the current supply of licence-exempt spectrum, might be sufficient to address expected Wi-Fi demand from fix network and convergent operators.

There are no exact figures how a split between WAS/RLAN and MFCN should be defined, still it is a fact that a coexistence only can be delivered with dedicated band portions for WAS/RLAN and MFCN purposes.

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

1) Environmental impact assessment

MNOs already using bands 700-800-900-1800-2100-2600-3600 for MFCN purposes, and all these spectrum bands can be used as macro grids. The 6 GHz ought to have similar deployment possibilities as all „old" spectrum sets, with the capability of a macro grid deployment. Increasing the amount of spectrum frequencies per site is a more environmental-friendly way to increase capacity than increasing the number of sites, because of fewer equipment in the network create less energy and environment burden in deployment, operation, and network upgrade phases. Furthermore large contiguous spectrum blocks (compared to fragmented blocks) support better performance with less complex deployment and operation. Deployment limitations, e.g. on base station transmit power or EMF limits would lead to the need for increasing the number of sites.

2) Social economic impact

A detailed economic impact assessment[1] by GSMA Intelligence of the different assignment scenarios of the 6 GHz band across 24 countries, including Germany, France and Italy, found that optimal socio-economic benefits are achieved from at least 700 MHz for licensed 5G use, namely the upper 6 GHz band. Even in countries with extensive fibre broadband penetration, the availability of an additional 500 MHz of spectrum for unlicensed use in the lower 6 GHz band (5.925-6.425 GHz), representing roughly a doubling of the current supply of licence-exempt spectrum, might be sufficient to address expected Wi-Fi demand.

III) Provide information about:

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

MFCN

Communication providers typically utilise both licensed and unlicensed spectrum with different deployment architectures to serve different use cases. Mobile network operators (MNOs) use licensed spectrum in core frequency bands to provide services to industry, governments, and consumers. Spectrum with guaranteed rights of use helps provide secure, reliable, and good quality service for end-users. Licensed spectrum also provides certainty, incentivises investment, and gives predictability for MNOs to develop long-term plans, knowing that they will have access to a certain band for the length of time guaranteed in their spectrum licence. Mobile networks will need, on average, 2 GHz of mid-band spectrum per country by 2030 to meet speeds outlined in the IMT-2020 vision of the ITU. This is challenging to achieve without 6 GHz.

[1] The socioeconomic benefits of the 6 GHz band: considering licensed and unlicensed options (gsmaintelligence.com)

WAS/RLAN

Unlicensed spectrum provides access connectivity to user equipment in localised fixed locations and can be an important component of communications infrastructure. The 2 convergent operators are broad and largest providers of fixed connectivity using Wi-Fi in Hungary with a huge uptake of WiFi6. WiFi7 is in the corner, and by 2030 WiFi8 surely will be deployed on FTTH end-points of the Hungarian operators in high volumes. It is expected that the demand for WAS/RLAN use cases might be met by using currently available mid- and high-band spectrum.

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

Where C band has relevance, and is deployed in the following years, on those sites the 6GHz will have relevance, as a further capacity macro layer, with similar number of BS as C band assumed to be rolled out.

IV) Provide information about standardization and technology impact

For cellular networks, standardization and development have started and several trials have been conducted by mobile vendors and operators still there are several questions to be answered (also raised in WRC23).

In our opinion a licensed use of radio services, with national evaluation of spectrum demands, and appropriate conditions is the best approach to ensure compatibility within all services those are candidate for the 6 GHz band usage. Only a licensed spectrum usage enables administrations and operators to ensure compliance with the respective usage conditions.

Budapest, 16 August, 2024

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