

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

Samsung Electronics response

Samsung Electronics welcomes the opportunity to provide its thoughts on the RSPG “Questionnaire on Long-term vision for the upper 6 GHz band”.

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

Based on market studies focused on MFCN and WAS/RLAN, Samsung understands that there has been a significant growth in traffic on both mobile broadband and Wi-Fi networks over the last decade and that this trend of growth is expected to continue. Therefore, additional spectrum assignment to support both licence-exempt and licensed mobile spectrum is important to enable ongoing market growth and technology innovation and development. However, Samsung believes that shared use of spectrum in the upper 6 GHz band will fail to meet either need because of more complexity, uncertainty and inefficiency of deployment to both MFCN and WAS/RLAN.

III) Provide information about: 1) the possible role of the upper 6GHz for MFCN or WAS/RLAN, 2) use cases, expected deployments and timeframe

The industries and CEPT administrations have already spent considerable time in discussing the pros and cons of either MFCN or WAS/RLAN in the upper 6GHz band. Samsung can see that either one of these two would benefit from exclusive access to the band, i.e. no shared use of the band:

- IEEE 802.11be (Wi-Fi 7) will be able to use bandwidths up to 320 MHz. Lack of access to upper 6 GHz band would hamper achieving the highest potential throughput from this latest RLAN generation. RLAN is used in various device categories and also in device-to-device communications
- MFCN would benefit from upper 6 GHz band deployment on existing mid-band sites, which minimizes the deployment cost of 5G-Advanced and later on, 6G networks. Providing seamless citywide coverage with the existing base station grid, however, requires high power base stations.

Whilst we observe that IEEE standards for Wi-Fi 7 are ready, considering the long timelines on the discussions in Europe, (e.g. the draft CEPT mandate on the upper 6GHz band, and any potential EC decisions taking place towards 2027-28), Samsung expects that also MFCN systems would be ready to be deployed in that band when final decisions are to be made.

IV) Provide information about standardization and technology impact

The impact to both MFCN standardization (3GPP) and WAS/RLAN standardization (IEEE) depends on the extent of hybrid sharing that is envisioned in the upper 6GHz band. MFCN standards (3GPP) have been developed based on exclusive usage of a spectrum band, and any sharing has been managed internally within the system (WCDMA, LTE, NR). MFCN in licensed bands has not been designed to

detect and coexist with RLAN. Whilst WAS/RLAN standards (IEEE) do have coexistence mechanisms in place to operate on licence-exempt bands (energy detection, preamble detection), these have not been designed for coexistence with MFCN systems.

CEPT studies have discussed sharing taking place in frequency, temporal, spatial and signal domain. Should the upper 6GHz go exclusively to MFCN or to WAS/RLAN, the existing respective standards can be deployed with minor adjustments to apply to the specific frequency range. Hybrid sharing schemes start to bring impacts that are not straightforward to address in the respective standards organisations. MFCN today does not detect the presence of other uses in the bands it operates at, nor does it provide beacon signals to RLAN to detect it more reliably than through energy detection. These kind of features would be needed should hybrid sharing be sensing based.

Samsung believes that any added functionality to enable hybrid sharing causes more complexity, uncertainty and inefficiency in implementation to either/both MFCN or WAS/RLAN than exclusive usage. Firstly, the need for major updates on technical standard(s) of WAS/RLAN and MFCN may take a considerable time. Secondly, the standards organisation for WAS/RLAN and MFCN, respectively, being independent and following their own roadmaps, it will be difficult to ensure that any future enhancements continue to fulfil the requirements for efficient hybrid sharing on the upper 6 GHz band.