

EBU response to the RSPG Questionnaire on Long-term vision for the upper 6 GHz band

The European Broadcasting Union is the world's leading alliance of public service media. The EBU represents 113 organizations in 56 countries. Public service media are entrusted with the performance of the public service mission to reach all people present on the territory of their Member State with high quality content to inform, educate and entertain. To fulfil their mission, EBU Members rely on both broadcast and broadband infrastructures, in linear and non-linear delivery modes: terrestrial and satellite broadcast and broadband networks, including fibre, RLAN, and IMT.

The EBU welcomes the opportunity to comment on the RSPG Questionnaire on 'Long-term vision for the upper 6 GHz band'. The comments primarily address the questions directed to the stakeholders providing incumbent services in the upper 6 GHz band (6 425-7 125 MHz). It is understood that the objective is to explain the impact of possible future usage of the upper 6GHz band for MFCN and/or WAS/RLAN on existing services.

1) What are your current and future spectrum needs (before and beyond 2030) in the upper 6GHz band?

RLAN vs IMT

Most viewing of media content takes place at home. EBU members' content is increasingly being consumed online, and in many – indeed, most – houses, IP connectivity to user devices such as TV sets, smart speakers and so on is primarily via RLAN (Wi-Fi). As the adoption of online access to media content and services continues to increase, it is likely that more spectrum for indoor Wi-Fi will be required. For EBU members, this is a higher priority than provision of additional mobile spectrum.

Incumbent Services

Fixed Satellite Service

The band 6 425-7 125 MHz is allocated to the Fixed Satellite Service (FSS) (Earth-to-space only below 6 700 MHz, both directions above 6 700 MHz) on a primary basis. There could be some residual use by broadcasters in certain European countries to operate satellite distribution with uplink below 6 725 MHz (and corresponding paired use of the 3 400-3 700 MHz band for downlink). These satellite links may still be used to provide feeds for terrestrial DVB-T/T2, FM and DAB distribution, as well as DTH services or feeds to partner broadcasters.

The characteristics of the C-band, in terms of wide coverage and resilience to high rainfall rates, are unique and difficult to replace to reach many geographical areas outside of the CEPT region, which is particularly important for EBU members providing international services.

Fixed Service

The band 6 425-7 125 MHz is also allocated to the Fixed Service on a primary basis and is currently used by broadcasters in certain European countries to operate fixed microwave links to provide feeds for DVB-T/T2, FM and DAB distribution.

These fixed link systems are expected to continue in many European countries beyond 2030. In particular, in some countries there has been an increase in recent years in the use of this band for fixed video links due to the following causes:

- The refarming of the 700 MHz band which required intensive use of DTT Single Frequency Networks (SFNs) with the consequent impossibility of using alternative connection methods to radio and/or satellite links (e.g. local Multiple Frequency Networks (MFN) transmitters);
- Overcrowding uses in the lower frequency bands (e.g. 4 GHz, Lower 6 GHz);
- The difficulties already encountered in sharing the Lower 6 GHz band with WAS/RLAN services which cause interference to fixed links.

The transition to DVB-T2 under way in some countries implies an increase of at least 50% of the transmission capacity for each multiplex, determining, as a result, the need for a proportionally greater bandwidth or number of frequencies for the connection to each transmitter.

The EBU notes that in some countries, where networks of terrestrial fixed links in the upper 6 GHz band are used to feed terrestrial transmitters, these have been designed to take advantage of the characteristics of the band, namely:

- Reliable connections over the typical inter-site distance. Higher frequency bands are likely to require additional intermediate link sites with consequential environmental, energy and economic impacts.
- Higher frequencies are more susceptible over long paths to atmospheric effects (such as rain or snow fade) and are found not to offer the performance needed for programme distribution links.

Lower frequency bands (e.g. 4 GHz or the lower 6 GHz bands), while not suffering from these issues, have very limited availability in some countries due to current intensive use.

Electronic Newsgathering

In the 7 025-7 125 MHz band, there is also terrestrial Electronic Newsgathering (ENG) use, and this is identified as a harmonised tuning range in [ERC Recommendation 25-10](#) for cordless cameras, portable video links, mobile video links, and temporary point-to-point video links. It is expected that this use will also continue beyond 2030.

2) What impact on your service do you expect from the introduction of MFCN and/or WAS/RLAN in the upper 6GHz band?

In the preparations of WRC-23 Agenda Item 1.2, several sharing and compatibility studies between the FS and IMT in the frequency band 6 425-7 125 MHz were done. The results showed that a separation distance is necessary for the coexistence between the two systems without harmful interference. The separation distances could go from some 10s of km to 100s km depending on the scenario and on the technical parameters and assumptions made in the studies.

The EBU's view is that any new use of the upper 6 GHz band should not impose additional regulatory or technical constraints on the incumbent services, which would preclude their future development.

3) What measures could improve compatibility from your perspective?

Coexistence between IMT and the Fixed Service (FS) would require, as a minimum, site-by-site coordination within a country as well as across borders. This is explicitly recognized by WRC-23 to realize a coexistence between IMT and the FS if they are deployed in the same or adjacent geographical areas. Additionally, there is need to do further detailed sharing and compatibility studies (both co-channel and adjacent channel) to define those technical

conditions (separation distances, out-of-band emission levels, etc) that would protect incumbent fixed services. Similar requirements are not known concerning the coexistence between WAS/RLAN and the fixed service which gives rise to the assumption that WAS/RLAN is easier to be coordinated with the FS than IMT with the FS. Consequentially, EBU prefers an allocation to WAS/RLAN in the upper 6 GHz band to protect the continued operation of the FS by our members.

Coexistence between IMT and the Fixed Satellite Service would require site by site coordination with the FSS - uplink earth stations.

In WRC-23, there was an extensive debate on AI 1.2 relating to the identification of certain frequency bands for IMT. The WRC-23 adopted the Resolution 220 (WRC-23) "*Terrestrial component of International Mobile Telecommunications (IMT) within the frequency band 6 425-7 125 MHz*", which *invites* ITU-R:

- 1) *To develop harmonized frequency arrangements to facilitate IMT deployment within the frequency band 6 425-7 125 MHz;*
(...)
- 4) *To update existing ITU-R Recommendations/Reports or develop new ITU-R Recommendations/Reports, as appropriate, to provide information and assistance to the administrations concerned on possible coordination of stations in the fixed service with IMT stations in the frequency band 6 425-7 125 MHz.*

According to *invites 1*, WP5D will revise Recommendation ITU-R M.1036-7, to show a frequency arrangement for the upper 6 GHz band.

According to *invites 4*, WP 5D is developing a working document towards a preliminary draft new Report ITU-R M.[FS-IMT COORDINATION] - Coordination of stations in the fixed service with IMT stations in the frequency band 6 425-7 125 MHz.

The EBU notes that a TDD frequency arrangement could simplify sharing because it would be possible to limit the IMT to use only a portion of the band.

In light of the above, the EBU would propose that RSPG, in developing a long-term vision for the upper 6 GHz band, takes into account the outcome of in ITU-R studies in response to ITU-R Resolution 220 (WRC-23).

Contacts:

Elena Puigrefagut, EBU Senior Project Manager, puigrefagut@ebu.ch

Vincent Sneed, EBU Senior EU Policy Adviser, sneed@ebu.ch