TELESPAZIO
a LEONARDO and THALES company

Rome, 6 August 2024

Telespazio responses to the

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

B. <u>Questions directed to the stakeholders providing incumbent services</u> *in the upper 6 GHz band, such as:*
- Fixed service
- Fixed satellite service
- Radio astronomy service
- SST (Sea Surface Temperature) sensors
- UWB

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About Telespazio

Telespazio would like to thank the Radio Spectrum Policy Group (RSPG) for the opportunity to share its view on the RSPG Work Program 2024 and beyond regarding the upper 6 GHz band.

Telespazio is a recognized satellite operating company providing a wide range of communication services in the Fixed Satellite Service (FSS) through its international network of teleports, among which the Fucino Space Center has been active since 1963 and with its 175 antennas and its 370.000 Sq m of surface area is one of the largest teleports in the world for civilian uses.

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

The frequency band 6425-7075 MHz is used for fixed-satellite service (FSS) in the Earth-to-space direction. Moreover, the band 6700-7075 MHz is allocated to the FSS globally in the space-to-Earth direction for feeder links for non-geostationary satellite systems of the mobile-satellite service (MSS). The upper 6 GHz is a key frequency band for the FSS with many operational networks providing critical communications to European citizens, businesses, and government users. Feeder links for the MSS are essential for maritime operations as well as for the aviation industry. Moreover, the upper 6 GHz band is intensively used for telecommand and control signaling on which satellite operations safety relies.
Therefore, the use of the 6425-7075 by satellite networks in the FSS is crucial for a wide range of communications with significant societal benefits to Europe.
In Italy, Telespazio currently holds frequency use rights expiring after 2035 in the upper 6 GHz band for several applications with further earth stations planned to be operational in the future. In addition, Telespazio operates several fixed links in the same band.
Telespazio is of the view that the upper 6 GHz band shall continue to be particularly attractive to satellite operators for the FSS in the long-term.

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

Telespazio is concerned by the issue of compatibility between IMT deployment and FSS. Studies conducted within the ITU-R framework in preparation of the WRC-23 (Agenda Item 1.2) have shown that IMT deployment in the upper 6 GHz band could seriously impact on the FSS, particularly with respect to the uplink feeder links in the 6425-7075 MHz band. Some studies showed that the sharing between FSS and IMT would be feasible only assuming extremely limited deployment of IMT in the 6 GHz band[1], a scenario which seems to be unrealistic and even not beneficial for IMT industry as well. When a more realistic and dense deployment of IMT was assumed in the band, sharing studies have clearly shown interference from IMT well above FSS protection criteria. Moreover, in other bands (3600-3800 MHz in the space-to-Earth direction), the impact of IMT to the FSS operations have been already reported on field, clearly showing that IMT systems can cause unacceptable interferences to satellite operations.

3) What measures could improve compatibility from your perspective?

WRC-23 with the ITU-R Resolution 220 (WRC-23)[2] agreed to identify the frequency bands 6425-7125 MHz in Region 1 and 7025-7125 MHz in Region 3 for IMT, with specific conditions to protect FSS. IMT base stations shall respect an e.i.r.p. mask to protect FSS in the Earth-to-space direction and shall ensure the protection of FSS in the space-to-Earth direction in the band 6700-7075 MHz through the adoption of site-specific coordination.

It should be further noted that the outcome of CEPT studies in preparation for WRC-23[3], identified as European Common Proposal (ECP) for the frequency bands 6425-7025 MHz, 7025-7125 MHz under WRC-23 agenda item 1.2, neither proposed nor supported an IMT identification of the frequency range 6425-7125 MHz but identified a list of necessary conditions under which CEPT would have accepted an IMT identification in the frequency bands 6425-7025 MHz and 7025-7125 MHz. It's worth noting that the e.i.r.p. mask values proposed by CEPT in the ECP were more protective of the FSS than the ones identified in the ITU-R Resolution 220 of the WRC-23.

Telespazio believes that, in addition to the above-mentioned conditions identified in the ECP, further mitigation would be in any case required to protect FSS operations in all the scenarios in which a dense IMT deployment should be permitted in the band.

In conclusion, Telespazio is of the view that operation of the FSS in the band 6425-7125 MHz shall be guaranteed without imposing any limitation to the future deployment of the FSS networks. Telespazio identifies the need to develop a European regulatory framework for the use of the upper 6 GHz band to ensure unrestrained long-term operation of FSS with a clear indication of all the required mitigation measures, considering the results of the studies already conducted in the framework of CEPT.

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[1] Values of Rb, Ra_urban and Ra_suburban parameters, which determines the number of IMT base stations for different deployment environments on the landmass of the Earth limited to 1%, 10% and 5% respectively.

[2] WRC-23 Final Acts

[3] Addendum 4 to Document 65 (Addendum 2) of WRC-23