



AIRBUS comments to the Draft RSPG Report on 6G Strategic vision

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Introduction

AIRBUS wishes to thank the Radio Spectrum Policy Group for having the opportunity to provide inputs to this consultation on the “Draft RSPG Report *on 6G Strategic vision*”, published on the 13th of November 2024.

AIRBUS notes that the RSPG draft report is aiming at facilitating the initial launch and operation of 6G networks/services from 2030, and addresses the long-term spectrum availability and the implementation strategies of 6G.

AIRBUS supports the joint evolution and interoperability of terrestrial and non-terrestrial networks to leverage the most advantageous characteristics of satellite and terrestrial systems, while ensuring the protection and continuation of operation of existing services.

AIRBUS supports the EU needs to indicate in which spectrum bands the first launches of 6G are planned, and urges the RSPG to consider the bands already identified by WRC-19 and WRC-23, as well as the legacy bands (2G, 3G, 4G, 5G), as a matter of sustainability, environmental impact and sovereignty.

Please find hereafter AIRBUS comments on this draft report.

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- *Comment #1 on the legitimacy of the 6G spectrum needs*

In December 2016, the European Commission issued a Mandate to CEPT to harmonise technical conditions for the development of EU-wide 5G equipment, including the millimetre-wave (mmWave) band at 26 GHz (24.25-27.5 GHz), as it provides over 3 GHz of contiguous spectrum.

In July 2018, the ECC adopted the ECC Decision (18)06¹ setting the harmonised conditions for the introduction of 5G in the 26 GHz band. In May 2019, the European Commission released the Decision (EU) 2019/784 on harmonisation of the 26 GHz band. An update was finalised in 2020, taking into account the WRC-19 outcome for this band (see EC Decision (EU) 2020/590²).

After 10 years of intensive promotion, the mmWave band at 26 GHz is barely used for 5G in Europe. The number of base stations (gNodeB) operating at 26 GHz is still not disclosed in the 5G Observatory Biannual Report³, as it is the case for the other 5G frequency bands (700 MHz and 3.5 GHz).

The last 5G Observatory Biannual Report (June 2024) indicates that only 12 Member States have authorised spectrum within this band in the EU (see Figure 1), and only Austria did so since the publication of the last 5G Observatory Report in October 2023. This limited interest in the 26 GHz band is mainly attributed to the lack of demand from the mobile industry, and the mobile operators in particular.

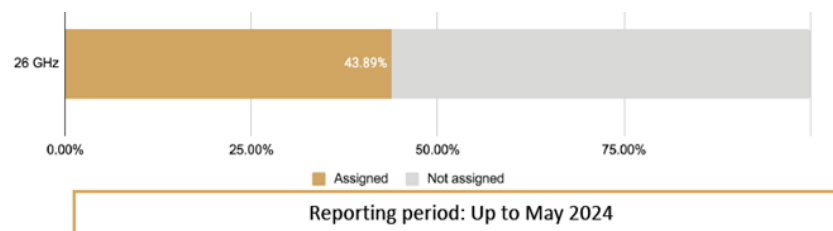


Figure 1 - 5G band assignment at 26 GHz in EU27 (source: 5G Observatory Biannual Report, June 2024)

In the US, T-Mobile completely surrendered 520 mmWave spectrum licenses in July 2024. Giving up spectrum without any financial payback is virtually unheard of in the US 5G industry. In most other countries where regulators have auctioned mmWave licenses, those licenses either went unsold or they sold at the minimum bid price. That's likely why Apple continues to eschew mmWave in its international products.

In October 2024, T-Mobile received the FCC's permission to give up some millimetre wave (mmWave) spectrum in the US that the operator said « *is not feasible to effectively deploy ... in a way that would benefit the public* ». T-Mobile CEO Mike Sievert said during a recent investor event: « *I'll take you back to '17 and '18, when the world was absolutely convinced that 5G would equal rollouts of millimetre wave technologies all across this country, Millimetre wave technology was synonymous with 5G if you look back and remember. ... And we looked at it and said, that is not how 5G is going to be won and lost.* ». Instead, T-Mobile has focused its efforts on the 2.5 GHz band it acquired from Sprint.

In light of these observations, AIRBUS strongly questions and challenges the need for more 6G spectrum as currently reflected in the Draft RSPG Report.

¹ <https://docdb.cept.org/document/3361>

² https://eur-lex.europa.eu/eli/dec_impl/2020/590/oj

³ <https://5gobservatory.eu/report-20-june-2024/>

- **Comment #2 on spectrum roadmap for nationwide-area coverage**

The Draft RSPG Report mentions the following innovation regarding intra-MNO Sharing :

- « *Spectrum sharing between different services and technologies allows MNOs to **dynamically allocate and share the same frequency spectrum between 4G and 5G**. This has enabled MNOs to **facilitate a faster roll-out of new technologies without the need for complex refarming of frequencies**, allowing for an optimised utilisation of spectrum resources during the migration phase »*
- « *Due to the ability to share spectrum resources on demand in real-time, **complex refarming of frequencies is no longer necessary**. While allowing a **faster roll out of new technologies** for customers with user equipment (UE) supporting the latest generation of mobile technologies, customers with legacy UE can still be served. This optimised utilisation of spectrum resources leads to a better overall user experience. »*

AIRBUS strongly recommends to further develop those innovations e.g., Dynamic Spectrum Sharing (DSS) among different mobile generations to accommodate 6G in the lower mobile frequencies, considering that **ECC has already harmonised more than 1 200 MHz** of spectrum for mobile broadband in the frequency range from 694 MHz to 3.8 GHz⁴, either for legacy mobile technologies (2G, 3G, 4G), 5G or 6G⁵.

In addition, the WRC-23 identified **700 MHz of new spectrum for 6G** in the upper 6 GHz band (6 425 - 7 125 MHz), also considered for WAS/RLAN in Europe. Those two technologies represent a good opportunity to develop inter-service spectrum sharing innovations as well as network integration, and leverage the strengths of non-3GPP and IMT technologies⁶.

AIRBUS supports the EU needs to indicate in which spectrum bands the first launches of 6G are planned, and urges the RSPG to consider these frequencies, the best in terms of indoor penetration, nationwide-area coverage and Capex optimization for MNOs.

- **Comment #3 on climate and environmental impacts**

The Draft RSPG Report qualifies the **reuse of existing base station grids as one of the main 6G goals for spectrum use**. It also mentions high-level policy objectives such as sustainability as a guiding principle, stating that « *6G technologies must also be an enabler for sustainability, considering environmental, social, and economic perspectives. A **reduced carbon footprint and energy efficiency** will be important design goals for 6G networks. More broadly, 6G should allow for reduced energy consumption across all sectors of the economy and society ».*

AIRBUS believes that considering additional frequency bands above 6 GHz is not aligned with these goals and principles, due to the laws of physics:

- 6G coverage at 7 GHz is not able to match the 5G coverage at 3.5 GHz, and even less the 4G coverage at 1800 MHz (see green lines in Figure 2).

⁴ <https://cept.org/ecc/topics/spectrum-for-wireless-broadband-5g>

⁵ And potentially **400 MHz more for 6G private networks** within 3.8 – 4.2 GHz, see [CEPT Report 088](#) to the European Commission in response to the Mandate on shared use of the 3.8 – 4.2 GHz frequency band by low/medium power terrestrial wireless broadband systems (WBB LMP) providing local-area network connectivity

⁶ See RSCOM Mandate to the CEPT on the upper 6 GHz band (6425-7125 MHz), with final results expected in July 2027

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- These differences are even bigger for indoor coverage, since 6G at 7 GHz will not be able to provide comparable indoor coverage as lower bands (see blue lines in Figure 2).

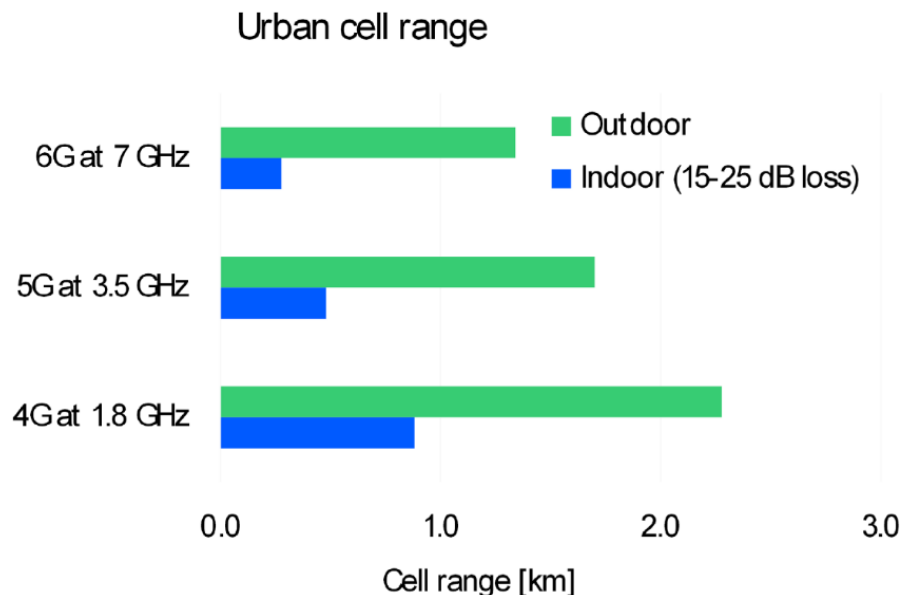


Figure 2 - Cell range estimates with Okumura-Hata propagation model (Source: The 6G Upgrade in 7-8 GHz Spectrum Range: Coverage, Capacity and Technology – a 5G Americas White Paper)

To match the coverage of lower frequencies, the propagation losses of higher frequencies need to be compensated by increasing beams' power. The higher the frequencies, the higher the propagation losses, the higher the needs for extra power to match the coverage of lower frequencies, **resulting in higher energy consumption, higher electro-magnetic field exposure and harmful interferences to other services.**

An alternative to this approach could be the identification, acquisition and deployment of additional base station sites by operators, which also contradicts the sustainability as a guiding principle for 6G promoted by the RSPG.

For these reasons, considering frequency bands above 6 GHz proves to be contradictory with the RSPG goals and principles with respect to climate, environmental and economic impacts.

- **Comment #4 on European sovereignty**

The agenda item 1.7 of the WRC-27 creates major risks for military air and space communications as well as Science and Earth observation data links in several key frequency bands, in particular in the X band.

The frequency band 7 125 – 8 400 MHz is of critical importance for a number of military communications (NATO harmonized) and Earth observation satellite systems, e.g.:

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- Military satellites communication solutions ensure Member States are always connected and ready for the growing amount of data to be collected and disseminated, on the ground, at sea, in the air and in orbit. These secure, flexible and scalable communications systems enable Member States to exchange critical information with appropriate connectivity, and to preserve individual national sovereign interests.
- Military Earth observation satellites help strengthen Member States' ability to plan and conduct operations. They provide decision-makers with the ability to enhance security, optimise mission planning and operations, improve performance and scale management resources.

On top of that, Earth observation satellites provide authoritative information about the past, present and future climate in Europe⁷ and the rest of the World. This data is essential for various applications and domains, including defense, security, agriculture, risk and disaster management, climate change and environmental monitoring and adaptation, urban planning, scientific research, etc. In addition, Earth observation satellites provide critical observation data across several key industries, including aviation, shipping, oil and gas, and transportation.

The introduction of 6G mobile networks in these bands will severely impact, if not prevent, any operations of military equipment and Earth observation satellite systems, yet essential for EU sovereignty, especially considering the current international geopolitical context and during war time.

Furthermore, AIRBUS supports the ICAO draft position shared with the ITU⁸ on the agenda item 1.7 of the WRC-27:

- To oppose any new identification for IMT in the frequency band 4 400 – 4 800 MHz that reduces the protection of, or imposes additional regulatory or technical constraints, on radio altimeters and Wireless Avionics Intra-Communications operating in the frequency band 4 200 – 4 400 MHz.
- To ensure the results of this agenda item would not reduce the protection of, or impose additional regulatory or technical constraints, on ground-based air traffic surveillance systems, airborne weather radar, and DAA radars, operating in the frequency band 15.4 - 15.7 GHz.

AIRBUS considers the WRC-27 as a major threat for military communications, Earth observation and as well for civil aviation. As a result, AIRBUS is opposed to any new identification for IMT in all the frequency bands listed in WRC Agenda Item 1.7.

- *Comment #5 on the priority for real innovation*

Asking for more spectrum has become a never-ending reflex for the mobile industry, while there are many other means to innovate.

The Draft RSPG Report mentions lots of promising paths to innovate, including:

- Further development of carrier aggregation features
- Further development of advanced multiple antennas (MIMO) techniques like distributed MIMO and cell-free design, as well as NOMA (Non-Orthogonal Multiple Access)⁹

⁷ [Copernicus, the Europe's eyes on Earth](#)

⁸ <https://www.itu.int/md/R23-WP5B-C-0202>

⁹ [Orange's vision for 6G - White Paper](#)

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- Further development of the interoperability with non-3GPP networks¹⁰
- Further development of the dynamic spectrum sharing (DSS) for dynamic re-farming of legacy bands (2G, 3G, 4G) and intra MNO sharing between present (5G) and future generations (6G and beyond)
- Further development of edge computing and processing power in end devices to reduce the amount of data that needs to be transferred
- Faster adoption of 5G SA (the « real » 5G) by MNOs, considering that it is occurring slowly and unevenly among European MNOs according to the Draft RSPG Report, whereas vertical use cases rely on network slicing based on the 5G SA
- Use of existing IMT spectrum to the most possible extent, including the UE harmonized mmWave bands
- Contribution to the interoperability of terrestrial and non-terrestrial networks to leverage the most advantageous characteristics of satellite and terrestrial systems
- Development of AI-based features...

Asking for more spectrum is probably the most convenient solution for the Mobile Industry, whereas it does not require real innovation efforts and creates significant burdens to other existing services.

AIRBUS believes that there are many ways to innovate and that the Mobile Industry should rethink its innovation model to generate more business and social value while significantly optimizing the use of scarce resources such as spectrum and energy.

Conclusion

AIRBUS thanks the Radio Spectrum Policy Group for giving the opportunity to provide comments on this consultation and counts on the RSPG to faithfully reflect its views when elaborating the final RSPG Opinion on 6G.

¹⁰ See RSCOM Mandate to the CEPT on the upper 6 GHz band (6425-7125 MHz), with final results expected in July 2027