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RADIO SPECTRUM POLICY GROUP

Opinion

on

6G spectrum roadmap

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RSPG Opinion on a 6G spectrum roadmap

1 Background and scope of work

The European Commission published in February 2024 the White Paper on "How to master Europe's digital infrastructure needs?", to which the RSPG provided its Opinion. The RSPG noted that the focus should be kept on making radio spectrum available in due time to meet future needs in the EU and promote European competitiveness. The RSPG underlined that any future plans for the rollout of 6G in the EU need to take into account coverage and capacity demands, competition aspects and align to national demands and specificities such as the geographic and demographic landscape.

The 5G spectrum roadmap developed by the RSPG in 2016 was widely welcomed by both Member States (MS) and stakeholders, underscoring the critical importance of establishing a clear roadmap ahead of launching a new generation of mobile networks. In accordance with the RSPG Work Programme for 2024-2025, the Group, after completing the first deliverable on 6G i.e., the RSPG Report on 6G Strategic vision, has now focused on the development of a 6G spectrum roadmap for the EU.

The global vision and timeline for 6G development is set by the ITU-R, and currently the work on IMT-2030 is in the phase of definition of relevant requirements (2024-2026). This provides the RSPG with a valuable opportunity to deliver an EU-level 6G spectrum roadmap ahead of the next standards development phase, noting spectrum identified at WRC-23 and the possible additional spectrum identification at the upcoming WRC in 2027, if incumbent services can be protected. The target for technology development, including providing the necessary harmonised spectrum, is to enable the launch of 6G networks by 2030, with broader implementation continuing in the years that follow. This timeline should also be supported by EU spectrum policy to enable the initial launch of 6G networks and services across the EU.

The RSPG Report on 6G Strategic vision addresses issues beyond the mere identification of possible spectrum bands for the initial 6G rollout, including for example interworking with non-terrestrial networks, spectrum sharing solutions, and authorisation regimes in 6G. Further assessment of these issues might facilitate the establishment of the 6G ecosystem and the 6G rollout in Europe.

This opinion takes into account recent RSPG reports and opinions[1]:

- RSPG Report on Assessment of future usage of the frequency band 470-694 MHz within the EU, Document RSPG25-033 (November 2025)
- RSPG Opinion on Long-term vision for the upper 6 GHz band, Document RSPG25-031 (November 2025) "RSPG upper 6 GHz Opinion" hereafter
- RSPG Interim Opinion on WRC-27, Document RSPG25-022 (June 2025)
- RSPG Opinion on the EU-level policy approach to satellite Direct-to-Device connectivity and related Single Market issues, Document RSPG25-020 (June 2025)
- RSPG Report on 6G Strategic vision, Document RSPG25-006 (February 2025)
- RSPG Opinion on "How to master Europe's digital infrastructure needs?", Document RSPG24-019 (June 2024)

[1] The RSPG reports and opinions referred to in this document can be found in Opinions and Reports - Radio Spectrum Policy Group - European Commission

- RSPG Opinion on assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027, Document RSPG24-007 (February 2024)
- RSPG Opinion on 5G developments and possible implications for 6G spectrum needs and guidance on the rollout of future wireless broadband networks, Document RSPG23-040 (October 2023)
- RSPG Opinion on Strategy on the future use of the frequency band 470-694 MHz beyond 2030 in the EU, Document RSPG23-035 (October 2023)
- RSPG Opinion on 5G implementation challenges (RSPG 3rd opinion on 5G), Document RSPG19-007 (30 January 2019)
- Strategic Spectrum Road Map Towards 5G for Europe (RSPG Second Opinion on 5G networks), Document RSPG18-005 (30 January 2018)
- RSPG Opinion on spectrum related aspects for next-generation wireless systems (5G), Document RSPG16-032 FINAL (09 November 2016)

2 Public consultation

A public consultation on the draft version of this RSPG opinion was held between 13 February and 27 March 2026. All non-confidential responses are published on the RSPG website[2]. The RSPG appreciated all comments received. The RSPG considered them carefully and improved the draft opinion as appropriate. The list of the stakeholders that responded to the public consultation can be found in Annex I.

The RSPG welcomes the number of responses received from a diverse range of stakeholders representing the majority of the parties with an interest in the development of 6G networks or incumbents with an interest in the future spectrum policy.

The wide support for this Opinion from stakeholders was clear. As expected, some of the individual comments reflect self-interest and as a consequence opposite views on the same topic are presented by different parties.

[2] https://radio-spectrum-policy-group.ec.europa.eu/document/download/851c75db-72dc-456e-9dd9-01d6120d71c7_en?filename=PC_responses-6G_Spectrum_Roadmap.zip

3 The opinion of the RSPG on the strategic spectrum roadmap towards 6G for Europe

Expecting the availability of 6G systems by 2030, this spectrum roadmap has been developed to facilitate the launch of 6G on a large scale in Europe. The goal is to create a common ecosystem and market for network and terminal equipment in Europe so that the benefits of 6G services are available to all European citizens in a timely manner, driving industrial and societal transformation and economic growth in Europe from 2030 and beyond. In its recent 6G strategic vision, RSPG recalled that coordinated timing for a launch of 6G services does not appear practical at EU level in the current harmonised bands due to technology neutrality and operators' migration plans for switching to enhanced technologies and that additional spectrum band(s) in EU could facilitate coordinated timing for 6G launch. This opinion identifies the frequency band(s) that should be made available for the launch of 6G mass market and for supporting development of various vertical markets and responding to relevant market demand and various European and national 6G policies.

1. **The RSPG is of the opinion** that 6G can be implemented in all frequency bands already harmonised for ECS (WBB):

   - Low bands below 1 GHz: 700 MHz[3], 800 MHz[4], 900 MHz[5], in order to enable nationwide and indoor 6G coverage.

   - Mid bands: 1500 MHz[6], 1800 MHz[7], 2 GHz[8], 2.6 GHz[9], 3.6 GHz[10], in order to possibly support and supplement the roll-out of high capacity 6G networks in suburban and urban areas.

   - High bands: 26 GHz[11], 42 GHz[12], in order to enable very high-capacity hot spot 6G coverage.

2. **The RSPG is of the opinion** that the upper 6 GHz band will be the primary band suitable for the introduction of 6G in Europe by 2030. This band can enable implementation of 6G use cases that require more capacity than 5G services. According to the RSPG Opinion on the long-term vision for the upper 6 GHz band, the frequency range for 6G in this band depends on the outcome of the WRC-27 but consists of at least 540 MHz of continuous spectrum. This can contribute to fulfil the mobile industry and operators' demands of additional contiguous 200 MHz of mid band spectrum per operator, enhancing coverage and capacity in suburban and urban areas while supporting the use of existing infrastructure and base station sites.

[3] Commission Implementing Decision (EU) 2016/687
[4] Commission Decision 2006/771/EC and Commission Implementing Decision (EU) 2025/105
[5] Commission Implementing Decision (EU) 2022/173
[6] Commission Implementing Decisions (EU) 2015/750 and (EU) 2018/661
[7] Commission Implementing Decision (EU) 2022/173
[8] Commission Implementing Decisions (EU) 2012/688 and (EU) 2020/667
[9] Commission Implementing Decisions (EU) 2022/2191and (EU) 2025/893
[10] Commission Decision 2008/411/EC and Commission Implementing Decision (EU) 2014/276
[11] Commission Implementing Decisions (EU) 2019/78 and (EU) 2020/590
[12] Commission Implementing Decision (EU) 2024/1983

3. **The RSPG notes** that the 7125-7250 MHz band is under study in Region 1 at WRC-27 for possible identification to IMT[13], and, if decided so, it could provide additional 6G spectrum complementing the upper 6 GHz band. **The RSPG recommends** that consideration should be given to the protection of incumbent services, and to feasible coexistence conditions to be defined at WRC-27 and further addressed in CEPT.

4. **The RSPG notes** that the 6425-7125 MHz band is currently subject to an EC mandate[14] for future harmonised conditions in Europe taking into account the protection of incumbent services in this band and adjacent bands. In this regard, it is noted in the EC Mandate that the rollout of 6G should continue to facilitate the operation and evolution of relevant incumbent services in this band where required. The response to the EC mandate is expected to be completed by 2027. This timing is consistent with a 6G launch in 2030.

   The RSPG encourages consumer equipment manufacturers to treat the 6425-7250 MHz range as one consistent block of spectrum regardless of the range finally harmonised for ECS (WBB) in Europe, in order to avoid market fragmentation.

5. **The RSPG recommends** that CEPT reviews the technical and regulatory conditions for all frequency bands harmonised under the Radio Spectrum Decision for mobile networks in order to ensure that they are suitable for 6G.

6. **The RSPG recognises** that most frequency bands harmonised for (WBB) ECS are already in use across Europe by previous ECS generations. To facilitate the introduction of 6G, **the RSPG recommends** that:

   - Mobile equipment manufacturers develop network and terminal equipment that support 6G technology within these frequency bands.

   - Mobile network operators plan the migration of existing networks to 6G in line with their market strategies, needs, and the availability of relevant equipment.

7. **The RSPG notes** that the high bands (26 GHz and 42 GHz) offering very high capacity were harmonised for (WBB) ECS already in 2019 and 2024 respectively but remain widely unused by (WBB) ECS up to now. The RSPG further notes that these bands cannot replace mid-band spectrum as a capacity band for wider area 6G. However, **the RSPG encourages** mobile equipment manufacturers to accelerate the development of devices supporting these bands and invites both mobile network operators and private network operators to actively utilise these frequencies.

8. **The RSPG is of the opinion** that the 3.8-4.2 GHz band, harmonised with Commission Implementing Decision (EU) 2025/2425[15] , is suitable for developing low/medium power local area networks also using 6G technology to support the growth of various vertical markets. The RSPG notes that other frequency bands are also being made available for local networks on a national level by Member States, and that these frequency bands could likewise be suitable for local 6G networks.

[13] Radio Regulations 2024 – Resolution 813 (WRC-23)
[14] EC Mandate to CEPT on Upper 6GHz
[15] Commission Implementing decision (EU) 2025/2425

9. **The RSPG notes** that obligations such as use-it-or-lose-it, use-it-or-lease-it or use-it-or-share-it in spectrum licenses could play an important role in making spectrum available for local networks, fostering innovation and addressing specific connectivity needs. The RSPG therefore **encourages** administrations to consider including this kind of obligations in the appropriate national regulatory provisions.

10. **The RSPG notes** that the 470-694 MHz band:
    - is allocated to the broadcasting service on a primary basis and currently used across the Union for terrestrial broadcasting;
    - has already been allocated to the mobile, except aeronautical mobile, service on a secondary basis in almost all EU countries by RR footnote 5.295A and could enhance nationwide and indoor 6G coverage and increase overall low-band capacity in countries where spectrum is available in the band;
    - is allocated to the land mobile service on a secondary basis for Programme Making and Special Events (PMSE) under RR footnote 5.296.

    The RSPG recognises that in a number of Member States there is a need to provide continuity for broadcasting and PMSE even beyond 2030.

    As a preliminary agenda item, WRC-31 intends to study and to consider, based on the results of ITU-R studies, possible regulatory actions, including a review of the allocation of the 614-694 MHz band to the mobile service for countries listed in RR footnote 5.295A.

    The RSPG will assess different scenarios for flexible use of the 470-694 MHz band and provide strategic common guidance on potential way forward for those countries wishing to use spectrum within the sub-700 MHz band for alternative uses in the mobile service, such as WBB ECS or PPDR. **The RSPG notes** that CEPT is developing a recommendation providing a toolbox with guidance for the countries wishing to introduce mobile services on a secondary basis.

11. **The RSPG notes** that 6G could also be used in very high frequency bands, including sub-THz bands, which are currently still a subject for research and long-term studies at international level. **The RSPG is of the opinion** that these sub-THz bands will not be ready for commercial mobile deployment by 2030, however, in the long term for advanced 6G applications, the use of very high frequencies could, for example, facilitate Integrated Sensing and Communications applications.

12. **The RSPG acknowledges that 6G should** build on the coordinated evolution and interworking of terrestrial and non-terrestrial networks (NTN), in order to capitalise on their respective strengths, while recognising that terrestrial networks will remain the primary platform for wide-area connectivity in Europe. 6G NTN can operate in terrestrial or satellite spectrum. Implementation in terrestrial spectrum should be pursued where deemed feasible in cooperation with the MNO, based on the outcomes of studies related to the mandate on satellite Direct-to-Device IMT (D2D-IMT) connectivity in EU-harmonised terrestrial frequency bands, and in line with any potential Commission implementing decision. RSPG has published an Opinion on satellite Direct-to-Device connectivity in 2025.

13. **The RSPG has reflected** on the importance of seamless interoperability between mobile networks and fixed broadband networks to which WAS/RLAN provides wireless access[16]. **The RSPG recognises** that licence-exempt technologies play an important role in Europe's connectivity ecosystem, in particular for indoor connectivity and traffic distribution management, **and recommends** that their evolution should be considered alongside mobile network development in support of overall spectrum efficiency and user benefit.

14. **The RSPG recognises** that the demand for spectrum continues to rise, especially for spectrum in the low and mid-bands, which are already heavily used by existing radio services and applications. Therefore, spectrum sharing solutions become essential, keeping in mind that incumbent services, especially mission critical services, are protected. The technical feasibility and economic aspects related to spectrum sharing mechanisms can vary substantially depending on the nature of the radio services and applications involved and should therefore be considered on a case-by-case basis. **The RSPG encourages** the academic community and industry to further research and develop sharing mechanisms. This will allow for spectrum sharing between services with the goal of using the finite resource more efficiently and accommodate the capacity requirements of the next generation mobile networks.

15. **The RSPG encourages** the academic community and industry to advance research and development of sustainable 6G technologies, including the environmental requirements of next-generation mobile networks, and to integrate these advancements into the standardisation process.

[16] See section 2.5 in RSPG Report on 6G Strategic vision, RSPG25-006 (February 2025).

ANNEX I

The following respondents provided comments to the public consultation:

01	Cisco Systems	22	Sennheiser electronic
02	Confindustria Radio Televisioni	23	Dynamic Spectrum Alliance
03	Save Our Spectrum	24	Broadcast Networks Europe
04	University of Oulu	25	Televisión abierta
05	Ceské Radiokomunikace	26	Wider Spectrum Group
06	BTG	27	e&
07	Satelio IoT Services,.	28	Wi-Fi Alliance
08	NOS Comunicações	29	Pearle*-Live Performance Europe
09	Yleisradio	30	5G Broadcast Strategic Task Force
10	Associazione Italiana Internet Provider	31	Small Cell Forum
11	Vodafone Group	32	Fastweb
12	Wind Tre	33	The Critical Communications Association
13	Wireless Microphone Spectrum Alliance Europe	34	Apple
14	A1 Telekom Austria	35	European Broadcasting Union
15	Orange	36	BT, Deutsche Telekom, Odido, Telecom Italia, Telefonica, Telia Company, Vodafone, Ericsson, Nokia
16	450 MHz Alliance	37	Digital Poland
17	GSMA & Connect Europe	38	Telespazio
18	european competitive telecommunications association	39	Nokia
19	European Utilities Telecom Council	40	European Automobile Manufacturers' Association and the European Association of Automotive Suppliers
20	Ericsson	41	5G Automotive Association
21	Association of Professional Wireless Production Technologies	42	Global mobile Suppliers Association

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