Nemzeti Média- és Hírközlési Hatóság

Band introduction
26 GHz frequency band

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14 August 2025

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Summary

As a result of the decisions taken at the 2019 World Radiocommunication Conference (WRC-19), international documents have been adopted containing the basic decisions on the future use of the 26 GHz frequency band (24.25–27.5 GHz) identified for broadband mobile service applications at global level, including EU legal acts establishing an obligation to designate and make available, on a non-exclusive basis, the 24.25–27.5 GHz frequency range for terrestrial systems capable of providing wireless broadband electronic communications services (MFCNs[1]). Based on the EU technical harmonisation decision, the application enabling the use of MFCN has already been included in the Hungarian regulation, with planned status earlier, and the main band use conditions enabling the future use of TDD[2] MFCN systems based on unpaired band arrangement will be included in the NMHH Decree No. 7/2015 (XI. 13.) on the national frequency allocation and the rules of using frequency bands (hereinafter referred to as the 'NFFF'), taking into account the results of the present public hearing.

In the 24.5–26.5 GHz frequency band, fixed point-to-point and point-to-multipoint systems are currently in operation. The necessary radio spectrum usage rights were obtained through awarding procedures by the right holders, who mainly provide backhaul connections required for mobile services in the frequency band. Radio spectrum usage rights expire in 2027. In connection with the introduction of next generation radio systems (5G NR[3]), it is necessary to identify the demand for the use of the 26 GHz frequency band in order to determine the specific future regulatory actions, the future possibilities for the use of the frequency band and the method of authorisation, and to decide on specific rules for the acquisition of radio spectrum usage rights.

According to the preliminary plan of the National Media and Infocommunications Authority (hereinafter referred to the NMHH), a total of 2400 MHz of spectrum will be made available in the frequency band if there is market demand, as follows. The 24.7–27.1 GHz frequency range may be available for the civilian use of MFCN, while the upper 400 MHz frequency range, 27.1–27.5 GHz, may be available for non-civilian use, subject to national use and block allocation. In the 24.7–27.1 GHz frequency range, the NMHH considers the competitive procedure to be the most appropriate solution for the authorisation of rights. The remaining 450 MHz spectrum in the lower part of the band, the 24.25–24.7 GHz frequency range is designed to meet local needs (e.g. verticals, industrial uses, logistics centres) on a first-come, first-served basis. The NMHH plans to determine the authorisation method in this lower frequency range on a first-come, first-served basis.

The NMHH already put the issue of the 26 GHz frequency band on the agenda at its public hearings held in 2017, and subsequently in 2019 and 2022. In order to protect existing networks, taking into account their mobile service plans and the correlation between available

[1] MFCN: Mobile/Fixed Communication Network
[2] TDD: Time Division Duplex
[3] NR: New Radio

frequency bands, operators of backhaul networks in the 24.5–26.5 GHz frequency band deemed it too soon to initiate a competitive procedure enabling the deployment of 5G in the 26 GHz frequency band. At the 2022 hearing, possible long-term plans for the use of the band were discussed, but only for the period after the expiry of fixed service rights.

The NMHH's goal with this public hearing is to learn about the plans of those interested in the 26 GHz frequency band and to assess future spectrum needs.

1. Introduction

According to the NFFF, fixed point-to-point and point-to-multipoint systems can currently operate in the 24.5–26.5 GHz frequency band. Right holders mainly use the frequency band for providing backhaul (typically point-to-point) links.

Current users acquired radio spectrum usage rights through two competitive tender procedures,[4] in 2008/2009 and[5] in 2011/2012. In the meantime, some entitlements have already expired and the current ones will expire in the first half of 2027.

As a result of the decisions taken at the 2019 World Radiocommunication Conference (WRC-19), the 26 GHz frequency band has been identified for International Mobile Telecommunications (IMT) use at the global level and the entire 26 GHz frequency band (24.25–27.5 GHz frequency band) planned for IMT has been allocated to the mobile service, enabling the deployment of broadband mobile applications, including 5G NR, at the international level in the frequency band.

In December 2018, the European Electronic Communications Code[6] (hereinafter referred to as the 'Code') set out further measures to promote the use of 5G. Under Article 54 of the Code, Member States were required to take the necessary steps by 31 December 2020 to allow the use of at least 1 GHz of the 26 GHz frequency band for electronic communications networks capable of broadband wireless data transmission, provided that there is clear evidence of market demand and no significant obstacles to the migration of existing radio spectrum right holders or to the release of the band.

In June 2019, the European Commission (hereinafter referred to as the 'Commission') adopted Commission Implementing Decision (EU) 2019/784[7] (hereinafter: Decision (EU) 2019/784) on the future use of the 26 GHz frequency band, which requires Member States to designate and make available, on a non-exclusive basis, the 24.25–27.5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services (MFCN) by 30 March 2020. The Commission Implementing Decision includes harmonised technical conditions for 5G use and provisions on compatibility with applications currently operating in the frequency band.

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[4] The Authority announced a call for proposals on 22 October 2008 in the subject of entitlement to radio spectrum use concerning microwave radio transmission systems (26 GHz), which was deemed successful on 30 April 2009.
[5] The Authority launched a tender in the framework of an official procedure, by publishing an announcement on 7 November 2011 concerning the right to use radio spectrum for the base block of the 26 GHz frequency band, which was deemed successful in February 2012 by a resolution.
[6] Directive EU 2018/1972 of the European Parliament and of the Council of 11 December 2018 on establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36).
[7] (EU)2019/784: Commission Implementing Decision (EU) 2019/784 of 14 May 2019 on harmonisation of the 24,25-27,5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union

Decision (EU) 2019/784 establishes a new channel arrangement and band usage conditions (e.g. BEM[8]) for the 26 GHz frequency band for the use of broadband MFCN applications (including 5G), which was amended by Commission Implementing Decision (EU) 2020/590[9] (hereinafter referred to as 'Decision (EU) 2020/590'), issued in 2020. Decision (EU) 2020/590 added a requirement for out-of-band emissions to the standards for use, in line with the decisions taken at WRC-19.

The NMHH's public hearings held on 23 November 2017[10], 13 December 2019[11] and 22 March 2022[12] also covered issues related to the use of the 26 GHz frequency band. During the public hearings, market players did not indicate any demand for the use of this frequency band for MFCN purposes, and considered it premature to launch an awarding procedure in order to protect existing uses. Segmented or mixed use of the band before the end of the entitlement period was not considered a good solution, and there was no support for a solution that might later require band rearrangement.

In 2023, the NMHH made the 32 GHz frequency band available for fixed point-to-point systems, allowing sufficient time for the establishment of backhaul connections in relation to the expiry of the fixed service rights for the 26 GHz frequency band, and, in order to ensure efficient spectrum use, allowed block management in the 32 GHz frequency band, similar to the 26 GHz frequency band, for which the necessary rights to use radio spectrum could be obtained through a competitive procedure.

The NMHH is aware of the fact that the military use of 5G technology is under investigation.

The legislative tasks necessary for the implementation of Decision (EU)2019/784 and Decision (EU)2020/590 will be carried out in two phases. As a first step of the implementation, the MFCN application has been included in the NFFF with planned status. In the second phase of the implementation task, an additional NFFF amendment may be made when the status of all or part of the frequency band will be upgraded from planned to designated for MFCN, with said amendment addressing the conceptual issues for the authorisation of the frequency band, as well as the regulatory solution for the management of the demand, as developed in the light of the results of the present consultation. The main band usage conditions allowing the future use of TDD MFCN systems with unpaired band arrangement can then be incorporated into the NFFF. The specific rules on authorisation and the acquisition of rights to use radio spectrum may be developed in light of the results of this hearing.

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[8] BEM: Block Edge Mask

[9] (EU)2020/590: amending Decision (EU) 2019/784 as regards an update of relevant technical conditions applicable to the 24,25-27,5 GHz frequency band

[10] http://nmhh.hu/esemeny/207926/Nyilvanos_meghallgatas_a_mobil_halozatok_uzemeltetesere_alkalmas_frekvenciasavok_hasznositasaval_kapcsolatos_szakmai_kerdesekre

[11] https://nmhh.hu/esemeny/207926/Nyilvanos_meghallgatas_a_mobil_halozatok_uzemeltetesere_alkalmas_frekvenciasavok_hasznositasaval_kapcsolatos_szakmai_kerdesekre

[12] https://nmhh.hu/esemeny/227029/Nyilvanos_meghallgatas_a_vezeteknelkuli_szelessavu_szolgaltatasok_nyujtasara_hasznalhato_frekvenciasavokkal_kapcsolatos_elkepzelesekrol_piaci_igenyekrol

In order to ensure the efficient use of the 26 GHz frequency band, the NMHH plans to limit the number of potential entitled parties in a significant part of the band and considers it appropriate to conduct a competitive procedure, taking into account the potential use of the 26 GHz frequency band for the operation of terrestrial systems capable of providing wireless broadband electronic communications services, in particular the planned 5G use, the suitability for nationwide service provision and the amount of available radio spectrum. Limiting the number of entitled parties is necessary to ensure the efficient use of radio spectrum. In addition, where there is a real and substantiated market demand, it may be possible to meet local demand through a first-come, first-served licensing regime.

With the implementation of the Code, Section 55/B (4) of Act C of 2003 on Electronic Communications (hereinafter referred to as the 'Electronic Communications Act') also allows the NMHH to authorise, for a transitional period of up to three years, the use of alternative uses instead of harmonised use of all or part of the radio spectrum covered by the radio spectrum usage rights for the bands specified in the Presidential Decree. This is conditional on there being no substantiated need for harmonised use in a public hearing and the proposed use not being an obstacle to harmonised use in neighbouring Member States. If, during this public hearing, no market participant indicates a need to use the 26 GHz frequency band for harmonised purposes, but there is a market participant that requests an extension of the existing usage for a transitional period, alternative usage may be allowed.

With the public hearing, NMHH is seeking to understand the plans and needs of those interested in the frequency band and to assess future spectrum needs.

2. Regulation of the 26 GHz frequency band

2.1. International regulation

2.1.1. ITU

The international regulation is based on the ITU[13] International Radio Regulations (RR[14]), which stipulate that the entire 24.25–27.5 GHz frequency band is allocated to fixed and mobile service on a primary basis in Region 1, including Europe, with the possibility of operating MFCN systems in the entire band. In addition, certain frequency ranges of the 26 GHz frequency band can be used for various satellite services, as well on a primary basis.

The allocation table according to the RR is set out in Annex 1 of the NFFF.

According to the RR amendment adopted at WRC-19, the 24.25–25.25 GHz frequency band (in which there was no previous mobile service allocation in Region 1) is allocated to the mobile service, except aeronautical mobile service on a primary basis, and the entire 24.25–27.5 GHz band is identified for IMT, in accordance with footnote 5.532AB.

According to footnote 5.532AB, "The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 242 (Rev.WRC-19) applies." Therefore, from an international regulatory perspective, the RR will enable the global roll-out of IMT, including 5G NR, in the entire 24.25–27.5 GHz frequency band.

2.1.2. CEPT[15]

The channel arrangement and possible frequency block assignments for point-to-point and point-to-multipoint systems currently operating in the fixed service are described in Recommendation T/R 13-02[16] and ECC/REC/(11)01[17], respectively.

For future use, the CEPT has adopted the key regulatory documents that form the basis for the regulation necessary for the implementation of MFCN systems.

[13] ITU: International Telecommunication Union
[14] RR: Radio Regulation
[15] CEPT: European Conference of Postal and Telecommunications Administration
[16] T/R 13-02: Preferred channel arrangements for Fixed Service systems in the frequency range 22.0-29.5 GHz
[17] ECC/REC/(11)01: Guidelines for assignment of frequency blocks for fixed wireless systems in the bands 24.5-26.5 GHz, 27.5-29.5 GHz and 31.8-33.4 GHz

2.1.2.1. Decision on the introduction of MFCN

On the basis of the Commission's mandate[18], CEPT has carried out studies on the feasibility of deploying 5G systems in the 24.25–27.5 GHz frequency band and has defined harmonised technical conditions for the use of MFCN systems. In addition, it examined the conditions under which MFCN systems can co-exist in the band and in adjacent bands with different applications currently in operation, including point-to-point, point-to-multipoint, and satellite systems. The results of CEPT investigations are summarised in CEPT Report 68[19]. Specifications and harmonised technical conditions for the availability and designation of the 26 GHz frequency band for MFCN systems (including 5G) are set out in ECC/DEC/(18)06[20] (amended twice so far, the latest version published on 20.11.2020).

Main provisions of ECC/DEC/(18)06:

- The CEPT administrations shall designate the 24.25–27.5 GHz frequency band for MFCN systems on a non-exclusive basis, taking into account the current and future deployment of earth stations in the space research, Earth exploration satellite and fixed satellite services.
- CEPT administrations should make at least 1 GHz of spectrum available for MFCN systems by 2020, depending on market demand.
- Only TDD systems can be operated, frequency arrangement is unpaired.
- According to the harmonised frequency arrangement, blocks of 200 MHz can be assigned (smaller blocks of multiples of 50 MHz can be assigned to make efficient use of spectrum). In case of other uses in the band, the blocks can be shifted in 10 MHz steps.
- The Block Edge Masks (BEM) and more detailed technical conditions are set out in Annex 2 to the Decision (the current version of the Decision specifies different values for out-of-band emissions in the 23.6–24 GHz frequency range).
- In the 22–23.6 GHz frequency band, the use of high density mobile and fixed wireless access (FWA) systems should be avoided.
- The frequency band shall not be used for downlink transmission between a base station and aerial user equipment, and for uplink transmission only if studies show that coexistence with other services in the frequency band can be ensured.

Figure 1 – *Example of block assignment based on harmonised band arrangement*

[18] https://digital-strategy.ec.europa.eu/en/library/radio-spectrum-cept-mandates

[19] CEPT Report B to the European Commission on the mandate to develop harmonised technical conditions for spectrum use in support of the introduction of next-generation (5G) terrestrial wireless systems in the Union: Harmonised technical conditions for the 24.25-27.5 GHz ('26 GHz') frequency band

[20] ECC/DEC/(18)06: Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 24.25-27.5 GHz

2.1.2.2. Compatibility of MFCN with other services in the frequency band

CEPT's responsible working groups have carried out the necessary studies and adopted documents containing specifications to ensure interference-free coexistence between MFCN systems and other systems, as follows.

ECC/REC/(19)01[21] provides specifications for the determination of the protection zone applicable to earth stations in the 26 GHz frequency band, taking into account the results of compatibility studies related to earth stations operating in the space research and Earth exploration satellite service. The Recommendation provides general principles and a specific calculation method for the definition of the protection zone around ground stations operating in the 25.5–27 GHz frequency ranges in the space research, GSO and NGSO Earth exploration satellite services.

ECC/REC/(20)01[22] provides guidelines on how to define protection zones for earth stations operating in the 24.65–25.25 GHz frequency range, based on the results of the studies related to earth stations operating in the fixed satellite service.

ECC Report 303[23] on compatibility with fixed service systems, providing guidance on which techniques and calculation methods can be used to avoid interference between 5G NR systems and existing fixed service systems. The report sets out general principles, but also includes specific calculations. The interference calculation is highly dependent on the system parameters and installation and propagation characteristics, so specific conclusions on the use can be drawn for a particular case, taking into account the specific circumstances. The coexistence of fixed service systems in the frequency band with mobile services is also addressed in Article 4 of Decision (EU) 2019/784 and in ECC/DEC/(18)06, Decision 1. The decision calls for a national approach to the coexistence of the two systems, which is supported by the ECC Report 303, listing concrete examples.

2.1.2.3. Synchronisation

ECC Report 307[24] contains the results of compatibility studies for TDD access MFCN systems planned to be operated in the 26 GHz frequency band. The report's conclusion diagrams illustrate the recommended exclusion distances for each synchronisation option for outdoor installations, for both co-channel and adjacent-channel use. The report indicates that indoor installations do not necessarily require synchronisation of base stations, but that installation

[21] ECC/REC/(19)01: Technical toolkit to support the introduction of 5G while ensuring, in a proportionate way, the use of existing and planned EESS/SRS receiving earth stations in the 26 GHz band and the possibility for future deployment of these earth stations

[22] ECC/REC/(20)01: Guidelines to support the introduction of 5G while ensuring, in a proportionate way, the use of existing and planned FSS transmitting earth stations in the frequency band 24.65–25.25 GHz and the possibility for future deployment of these earth stations

[23] ECC Report 303: Guidance to administrations for Coexistence between 5G and Fixed Links in the 26 GHz band ("Toolbox")

[24] ECC Report 307: Toolbox for the most appropriate synchronisation regulatory framework including coexistence of MFCN in 24.25–27.5 GHz in unsynchronised and semi-synchronised mode

conditions can affect interference. The compatibility between outdoor and indoor systems in unsynchronized cases depends greatly on building attenuation. The system parameters used in the tests (channel bandwidth, antenna height, antenna configuration, etc.) and other details (e.g. wave propagation model, simulation method) are provided in the relevant chapters of the report.

2.1.2.4. Licensing issues

The least restrictive technical conditions (LRTC[25]) for the use of the 26 GHz frequency band (24.25–27.5 GHz) for MFCN purposes were developed on the basis of use with individual licence, taking into account passive services in adjacent frequency bands. Various recommendations and reports on coexistence with applications from other services in the frequency band have been produced to provide guidance on how to proceed if Member States wish to introduce MFCN systems in the frequency band alongside other existing applications. When adopting the Commission Implementing Decision on harmonised band usage conditions for MFCN systems at European level, the Commission invited CEPT to also study the use of licensing methods other than individual licences.

2.1.3. European Union

Based on the RSPG opinion on 5G spectrum[26], the Commission has mandated CEPT to investigate potential 5G frequency bands.

The results of the test for the 26 GHz frequency band are presented in CEPT Report 68 adopted in July 2018[27], followed by the adoption of Commission Implementing Decision (EU) 2019/784 on harmonised technical conditions[28].

Commission Implementing Decision (EU) 2019/784 and Commission Implementing Decision (EU) 2020/590 amending Decision (EU) 2019/784 harmonise the essential technical conditions for the availability and efficient use of the 24.25–27.5 GHz frequency band by terrestrial systems capable of providing wireless broadband electronic communications services in the EU. Where existing uses in the band do not preclude the introduction of MFCN systems, Member States should designate and make available the frequency band for such applications on a non-exclusive basis where there is market demand, taking into account the technical criteria set out in the Decision, including criteria for coexistence with existing uses. Specific provisions for the protection of applications covered by the various radio services, such as fixed service, radio astronomy or satellite services, are set out in the relevant articles of the Decision.

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[25] LRTC: Least Restrictive Technical Conditions

[26] http://rspg-spectrum.eu/wp-content/uploads/2013/05/RPSG16-032-Opinion_5G.pdf

[27] CEPT Report B to the European Commission on the mandate to develop harmonised technical conditions for spectrum use in support of the introduction of next-generation (5G) terrestrial wireless systems in the Union: Harmonised technical conditions for the 24.25-27.5 GHz ('26 GHz') frequency band

[28] (EU)2019/784: Commission Implementing Decision (EU) 2019/784 of 14 May 2019 on harmonisation of the 24,25-27,5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union

Article 54 of the Code provides for rules on the specific 5G frequency bands needed to coordinate timing of assignments. Under the provisions of the Code, Member States shall, with respect to terrestrial systems capable of providing wireless broadband services, take all appropriate measures to allow the use of at least 1 GHz of the band in the 24.25–27.5 GHz frequency range by 31 December 2020, where necessary to facilitate the deployment of 5G, provided that there is clear evidence of market demand and there are no significant barriers to the migration of existing users or release of the band.

2.2. National regulation

2.2.1. Current legislation

Current usage rules for the 24.25–27.5 GHz frequency band are set out in Annex 2 of the NFFF. The main applications can be summarised as follows.

2.2.1.1. Civil fixed service systems applications

The 24.5–26.5 GHz frequency band is designated for civil fixed service systems (point-to-point and point-to-multipoint) on a primary basis. As a result of the competitive procedure, usage in the framework of block management is very significant throughout the country, but the imminent expiry of the rights and the opening of the 32 GHz frequency band will gradually reduce the intensity of usage in the frequency range. Fixed service use based on FDD[29] channel arrangement will be discontinued when the rights expire (in the first half of 2027) and the frequency range will be made available for TDD MFCN systems.

2.2.1.2. Civil satellite services applications

The 24.5–27.5 GHz frequency band is designated or planned for various satellite applications.

The 25.5–27 GHz frequency range is allocated to and designated for Earth exploration satellite (space-to-Earth direction) service on a primary basis. At the time of the present hearing, there is no actual use of this type in the band, but international coordination of satellite earth stations is underway for a limited number of sites in the 26.5–27 GHz frequency range. These stations may be needed in the future to define protection criteria for this part of the frequency range.

The 24.65–25.25 GHz frequency band is planned for fixed satellite service (Earth-to-space) applications on a primary basis. Due to the planned status, no earth station can currently operate in the frequency band. The protection of earth stations of the fixed satellite service operating in the frequency band is provided for in Article 3(c) and Article 5 of Decision (EU) 2019/784 and in Sections 1 and 7 of ECC/DEC/(18)06.

[29] FDD: Frequency Division Duplex

2.2.1.3. Non-civil applications

In the 26 GHz frequency band, the public NJFA[30] allows the operation of aeronautical, land and maritime military systems in the 25.25–27.5 GHz frequency range and land military systems in the 26.5–27.5 GHz frequency range. In Hungary, the 26.5–27.5 GHz frequency band is designated for non-civil mobile and fixed service applications. In addition, other non-civil (but non-military) single and dual frequency mobile services and digital point-to-point systems can be used. Currently, there is no valid radio licence in the 26.5–27.5 GHz frequency band. Since the military application of 5G technology is under investigation, it is appropriate to maintain a specific frequency range for this purpose. According to the current NFFF, in the 26.5–27.5 GHz frequency range, for non-civil use, "the right to use radio spectrum may be acquired after coordination of civil and non-civil spectrum management aspects, subject to the provisions of Decision (EU) 2019/784".

2.2.1.4. Short Range Devices (civil and non-civil)

Certain special Short Range Devices can be used in the band on a tertiary basis. These devices can operate with low power and, due to their tertiary nature, can not claim protection from nor cause harmful interference to primary and secondary services. (For additional information on automotive radars, see chapter 6.1.).

2.2.2. Planned MFCN applications

In order to prepare for the availability of the frequency band for 5G systems, terrestrial systems capable of providing electronic communications services have already been included in the table in Annex 2 of the NFFF in the entire 24.25–27.5 GHz frequency band as planned fixed and mobile service applications on a primary basis. In line with the above, the main band usage conditions allowing the future use of TDD MFCN systems based on unpaired band arrangement may be regulated in a future NFFF amendment, based on Decision (EU) 2019/784. The specific rules on authorisation and the acquisition of rights to use radio spectrum may be developed in light of the results of this hearing.

[30] Public NJFA (2021): NATO Joint Civil/Military Frequency Agreement) Extract for Public Disclosure 2021

3. Current use

The current radio spectrum usage rights in the 26 GHz frequency band are listed in Table 1 and Figure 2 in the Annex, as follows.

RIGHT HOLDER	BLOCK	LOWER SUB-BAND [MHz]	UPPER SUB-BAND [MHz]	EXPIRY DATE OF ENTITLEMENT
–	Block 1	24549–24577	25557–25585	
–	Block 2	24577–24605	25585–25613	
–	Block 3	24605–24633	25613–25641	
–	Block 4	24633–24661	25641–25669	
–	Block 5	24661–24689	25669–25697	
GUARD BAND	Block 6	24689–24717	25697–25725	
Yettel Magyarország Zrt.	Block 7	24717–24745	25725–25753	*05.04.2027*
	Block 8	24745–24773	25753–25781	
	Block 9	24773–24801	25781–25809	
	Block 10	24801–24829	25809–25837	
GUARD BAND	Block 11	24829–24857	25837–25865	
–	Block 12	24857–24885	25865–25893	
–	Block 13	24885–24913	25893–25921	
AH Infrastruktúra Szolgáltató Zrt.[31]	Block 14	24913–24941	25921–25949	*05.04.2027*
–	Block 15	24941–24969	25949–25977	
AH Infrastruktúra Szolgáltató Zrt. [32]	Block 16	24969–24997	25977–26005	*05.04.2027*
	Block 17	24997–25025	26005–26033	
GUARD BAND	Block 18	25025–25053	26033–26061	
V-Hálózat Távközlési Zrt.[33]	Block 19	25053–25081	26061–26089	*05.04.2027*
	Block 20	25081–25109	26089–26117	
	Block 21	25109–25137	26117–26145	
	Block 22	25137–25165	26145–26173	
	Block 23	25165–25193	26173–26201	
	Block 24	25193–25221	26201–26229	
GUARD BAND	Block 25	25221–25249	26229–26257	

[31] Following a demerger, AH Infrastruktúra Szolgáltató Zrt. is the entitled party through legal succession.
[32] Following a demerger, AH Infrastruktúra Szolgáltató Zrt. is the entitled party through legal succession.
[33] Following a demerger, V-Hálózat Távközlési Zrt. is the entitled party through legal succession.

RIGHT HOLDER	BLOCK	LOWER SUB-BAND [MHz]	UPPER SUB-BAND [MHz]	EXPIRY DATE OF ENTITLEMENT
–	Block 26	25249–25277	26257–26285	
Magyarország Telekom Nyrt.	Block 27	25277–25305	26285–26313	*05.04.2027*
	Block 28	25305–25333	26313–26341	
	Block 29	25333–25361	26341–26369	
GUARD BAND	Block 30	25361–25389	26369–26397	
D-Infrastruktúra Távközlési Kft.[34]	Block 31	25389–25417	26397–26425	*05.04.2027*
	Block 32	25417–25445	26425–26453	

1 – Fixed service radio spectrum usage rights in the 24.5-26.5 GHz frequency band

The current radio spectrum usage rights are granted according to the following amounts of spectrum for the different right holders.

- Magyar Telekom Nyrt.: 2×84 MHz
- Yettel Magyarország Zrt.: 2×112 MHz
- V-Hálózat Távközlési Zrt.: 2×168 MHz
- AH Infrastruktúra Szolgáltató Zrt.: 2×84 MHz
- D-Infrastruktúra Távközlési Kft.: 2×56 MHz

A bar chart illustrating user blocks and entitlements is provided in the Annex (Figure 2).

[34] Following the demerger, D-Infrastruktúra Távközlési Kft. is the entitled party through legal succession.

4. Future use

The EU acts that have a major impact on the regulation of future use are the Code and Decision (EU) 2019/784. Under EU rules, the 24.25–27.5 GHz frequency band must be designated and made available for terrestrial systems capable of providing wireless broadband electronic communications services on a non-exclusive basis, and at least 1 GHz of the band must be made available for use, provided that there is clear evidence of market demand and no significant barriers to migration of existing use or release of the band. Among the implementation tasks for Member States, the necessary steps include a review of existing radio spectrum usage rights and an assessment of market needs. The NMHH is examining the possibilities and ideas of current spectrum users and interested parties, together with their reasonableness, the plans already formulated and the possibilities for implementation. Taking into account the results of the previous public hearings and the expiry date of the existing radio spectrum usage rights of fixed service systems, the 24.25–27.5 GHz frequency band will be available for TDD MFCN after the rights expire.

According to the NMHH's preliminary plan, a total of 2,400 MHz of spectrum – the 24.7–27.1 GHz sub-band – will be made available for civil MFCN use, while the upper 400 MHz sub-band – the 27.1–27.5 GHz sub-band – will be allocated for non-civil use, allowing for nationwide use and block management. In the 24.7–27.1 GHz sub-band, the NMHH currently considers the competitive procedure to be the most appropriate solution for the authorisation of rights. Taking into account the potential uses of the 26 GHz frequency band and international practice, the remaining 450 MHz spectrum in the lower part of the band, the 24.25–24.7 GHz frequency range is designed to meet local needs (e.g. verticals, industrial uses, logistics centres). The NMHH plans to determine the authorisation method in this lower frequency range on a first-come, first-served basis.

- 24.25–24.7 GHz (450 MHz spectrum): for civil local use
- 24.7–27.1 GHz (2.4 GHz spectrum): for civil national use
- 27.1–27.5 GHz (400 MHz spectrum): for non-civil use

With the implementation of the Code, Section 55/B(4) of the Electronic Communications Act also allows the NMHH to authorise alternative uses (which may include existing uses) instead of the harmonised use of all or part of the radio spectrum covered by the right to use radio spectrum in the frequency bands specified in the Presidential Decree for a transitional period of up to three years. Alternative use may be authorised only if

a) a public hearing is held to prospectively assess the market demand for the use of radio spectrum and there is no market demand for the harmonised use of radio spectrum, and
b) alternative uses of radio spectrum do not prevent harmonised use in other Member States.

For the 26 GHz frequency band, the possibility of introducing alternative use arises if there is no demand for harmonised use from market players and, in addition, there is a demand for continued use from existing rights holders.

5. International coordination

The coordination arrangements based on the preferred frequency blocks for the current 24.5–26.5 GHz frequency band apply only to point-to-point and point-to-multipoint FDD access systems operating in the 24.549–25.053/25.557–26.061 GHz frequency range in the fixed service.

A recommendation (ECC/REC/(23)02)[35] on cross-border coordination has been developed for the use of frequencies in the border areas of TDD MFCN systems operating in the 26 GHz frequency band, which defines the threshold field strength values for unsynchronized networks.

In order to ensure the use of MFCN systems in the border area, new coordination agreements with neighbouring countries will be necessary in the future for the use of MFCN systems along the border.

[35] ECC/REC/(23)02: Cross-border coordination for Mobile/Fixed Communications Networks (MFCN) in the frequency band 24.25–27.5 GHz

6. Potential sources of interference

6.1. Automotive radars

Automotive radars installed on cars can operate in the 24 GHz frequency band, based on the European Commission Decision 2005/50/EC[36] and its amending Commission Implementing Decision 2011/485/EU[37].

Pursuant to Commission Implementing Decision 2011/485/EU, automotive radars were allowed to be placed on the market in the 24.25–26.65 GHz frequency band until 1 January 2018 (Article 1(1)). However, the date of 1 January 2018 shall be extended by 4 years for automotive short-range radar equipment mounted on motor vehicles for which a type-approval application has been submitted pursuant to Article 6(6) of Directive 2007/46/EC of the European Parliament and of the Council[38] and has been granted before 1 January 2018 (Article 1(2)(c)). Accordingly, from 2022, new vehicles equipped with radar in the 24 GHz frequency band are no longer allowed to be placed on the market, but the use of devices that were fitted at the factory or are fitted to replace such original equipment in vehicles registered, placed on the market or put into service before that date, may continue. This means that these devices can operate for the lifetime of vehicles equipped with 24 GHz automotive radar. Given the current low level of use, no significant interference is expected.

These radars have a broadband emission that covers the entire 26 GHz frequency band, but any interference in the upper 26 GHz frequency band is significantly reduced even in the case of direct radiation.

The interference effects of automotive radars on fixed service systems have been studied previously, the results of which are presented in ECC Report 23[39].

6.2. Avoiding adjacent band interference

At the edges of the 24.25–27.5 GHz frequency band, applications in adjacent bands should also be considered to avoid adjacent-band interference.

For use below 24.25 GHz, the 24.05–24.25 GHz frequency band is the NATO-harmonised band allocated to radiolocation applications on a primary basis. In Hungary, it is designated for common use (in addition, it is designated for amateur service and EESS on a secondary basis).

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[36] 2005/50/EC: Commission Decision of 17 January 2005 on the harmonisation of the 24 GHz range radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community

[37] 2011/485/EU: Commission Implementing Decision of 29 July 2011 amending Decision 2005/50/EC on the harmonisation of the 24 GHz range radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community

[38] 2007/46/EC: Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles

[39] ECC Report 023: Compatibility of automotive collision warning Short Range Radar operating at 24 GHz with FS, EESS and Radio Astronomy –

Ka-band satellite systems operate above the upper band limit (27.5 GHz), with earth stations transmitting in the Earth-to-space direction (such coordinated earth stations operate in Hungary as well). For notified satellite earth stations operating directly above the upper limit of the band, the coexistence conditions shall be determined on a case-by-case basis, taking into account the out-of-band emissions in the vicinity of the site.

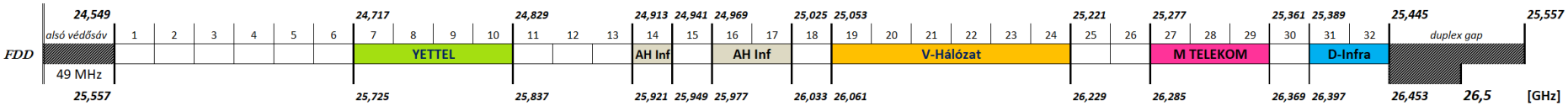
7. Radio spectrum fees

The calculation method of the regular radio spectrum fee is regulated in NMHH Decree 1/2011 (III. 31.) on the fees for frequency access and use (hereinafter referred to as the 'Fee Decree'). Based on the Fee Decree and according to the NFFF, in the case of radio spectrum usage rights covered by block management according to the NFFF, acquired as a result of a service procurement and competitive procedure, as a result of the extension of radio spectrum usage rights or as a result of the renewal of radio spectrum usage rights, and in the case of radio spectrum resold after acquisition, the holder of the radio spectrum usage rights shall pay a monthly band fee during the term of the right to use radio spectrum, from the earliest date of the validity of the radio licence as specified in Section 22(3) of NMHH Decree 4/2011 (X. 6.) on the rules of auction or tender for obtaining frequency use entitlement.

The rules governing the calculation of the band fee payable for current fixed service use are set out in Section 20 of the Fee Decree under the heading 'Fees for bands subject to block management' and in Annex 9.

The current Fee Decree does not contain any provisions on the fees payable for the entire 26 GHz frequency band planned for MFCN. The radio spectrum fee for the use of the band requires the amendment of the Fee Decree. The criteria for setting the fees should take into account the conditions for acquiring the right to use the band or the right to use radio spectrum, which are established as a result of the market needs assessment.

Annex



2 – Fixed service radio spectrum usage rights in the 24.5–26.5 GHz frequency band

alsó védősáv	lower guard band
V-Hálózat	V-Hálózat