
Band introduction

42 GHz frequency band

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Summary

Digital infrastructure is at the heart of Hungary's competitiveness and modernisation efforts, and is addressed in a number of national and EU strategies.

The Radio Spectrum Policy Group (RSPG¹), in its Strategic Spectrum Roadmap towards 5G for Europe, highlighted the need to make frequency bands above 24 GHz available for wireless broadband electronic communications services with mobile/fixed communications networks (MFCNs²) in order to deploy high-capacity 5G networks, and identified the 40.5–43.5 GHz frequency band (hereinafter referred to as the 42 GHz frequency band) as a priority for studying mm-wave 5G bands in the EU.

In line with the RSPG Roadmap, Commission Implementing Decision (EU)2024/1983³ was adopted in July 2024, specifying that the 42 GHz frequency band should be made available for terrestrial systems capable of providing wireless broadband electronic communications services.

The first phase of the implementation of the Commission Implementing Decision (EU)2024/1983 was carried out by the National Media and Infocommunications Authority (hereinafter referred to as the 'NMHH') with the amendment of Decree 7/2015 (XI. 13.) on the national frequency allocation and the rules for the use of frequency bands (hereinafter referred to as the 'NFFF'), which entered into force on 28 November 2024⁴. In this phase, the technical harmonisation rules provided for in the Annex to the EU act have been incorporated in the national regulation, allowing for technical planning before opening up the frequency band for MFCN purposes.

The use of MFCN networks in the 42 GHz frequency band will enable innovative, next-generation wireless broadband electronic communications services (including 5G) based on small cells and using large block sizes up to 1 GHz. The frequency band can also be used to deploy hotspots in urban and suburban areas.

The NFFF amendment, which will include detailed usage rules for the new systems, will be developed taking into account market needs for the use of the frequency band.

¹ The Radio Spectrum Policy Group (RSPG), established by Commission Decision of 11 June 2019 setting up the Radio Spectrum Policy Group and repealing Decision 2002/622/EC (2019/C 196/08), is an advisory group dealing with strategic radio spectrum issues in Europe.

² MFCN: Mobile/Fixed Communication Network

³ Commission Implementing Decision 2024/1983 of 18 July 2024 on the harmonisation of the 40.5-43.5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union

⁴ NMHH Decree No. 12/2024.(XI. 13.)

1. Introduction

In the late 1990s and early 2000s, the use of fixed service point-to-multipoint wireless multimedia systems and point-to-point systems in the 42 GHz frequency band was planned at European level; however, in the end, very few such systems were deployed (point-to-multipoint systems are not used at all, while point-to-point systems are used in only a few countries).

Under the NFFF, the entire 40.5–43.5 GHz frequency band is currently allocated to the fixed service and the land mobile service with planned status, while the 40.5–42.5 GHz sub-band is planned for the fixed satellite service (space-to-Earth) and the 42.5–43.5 GHz sub-band is designated for radio astronomy. Currently, the 40.5–43.5 GHz frequency band is not actually used in Hungary. Without a change in the regulation, only the 42.5–43.5 GHz sub-band could be used and only for radio astronomy applications, as this is the only designated application in the band. Therefore, for the time being, the other applications are only included in the NFFF with planned status; however, if the need arises, the use of the band may become possible once the appropriate band use conditions and spectrum management requirements are incorporated.

The 37.5–43.5 GHz frequency band was harmonised globally for international mobile telecommunications (IMT) at the 2019 World Radiocommunication Conference (WRC⁵-19) through amendments to the International Telecommunication Union (ITU) International Radio Regulations⁶. The relevant amendment to the International Radio Regulations sets out measures to ensure the coexistence of IMT systems, including 5G, with the Fixed Satellite Service (FSS) and the Radio Astronomy Service (RAS⁷) in the 42 GHz frequency band. (At the European level, only the 40.5–43.5 GHz frequency range was supported for IMT due to the intensive use of the lower frequency range by other applications.)

The RSPG has adopted three opinions⁸ on the spectrum strategy roadmap for 5G in Europe, highlighting, inter alia, the need to introduce the use of frequency bands above 24 GHz to achieve the high capacity performance targets for 5G and identifying the 42 GHz band as a priority for the study of second-phase millimetre-wavelength 5G bands used by terrestrial wireless networks in the EU. The RSPG decided that the 42 GHz frequency band is a viable option for 5G in the long term, taking into account the need for an overall balance between the provision of terrestrial mobile services and satellite services in the 40–50 GHz frequency range.

⁵ WRC: World Radio Conference

⁶ In accordance with Resolution 243 (WRC-19) on the Terrestrial component of International Mobile Telecommunications in the frequency bands 37-43.5 GHz and 47.2-48.2 GHz.

⁷ RAS: Radio Astronomy Service

⁸ Opinion on spectrum related aspects for next-generation wireless systems (5G) (RSPG16-032 final, 9 November 2016); Second Opinion on 5G networks (RSPG18-005 final, 30 January 2018); Third Opinion on 5G implementation challenges (RSPG19-007 final, 30 January 2019)

On 14 April 2020, the European Commission (hereinafter referred to as the 'Commission') mandated the European Conference of Postal and Telecommunications Administrations⁹ to develop harmonised technical conditions for the least restrictive possible next-generation (5G) terrestrial wireless systems in the prioritised frequency bands above 24 GHz, including the 42 GHz band. This resulted in the publication of CEPT Report 82¹⁰, which formed the basis for Decision ECC/DEC/(22)06 on technical requirements for MFCN systems¹¹ and Commission Implementing Decision (EU) 2024/1983.

Previously, there was a CEPT Decision (ERC/DEC/(99)15¹² on the designation of fixed service Multimedia Wireless Systems (MWS) and point-to-point systems, which was withdrawn by ECC/DEC(22)05¹³. This was due to the harmonisation to MFCN systems, on the one hand, and the lack of market demand for MWS systems on the other. (Point-to-point systems are used only in a few European countries in the band.) While the CEPT Recommendation on the FDD¹⁴ channel arrangement for point-to-point applications remains in force, the band must now be made available for terrestrial systems capable of providing TDD¹⁵ wireless broadband electronic communications services, in accordance with Commission Implementing Decision (EU) 2024/1983.

Following the publication of Commission Implementing Decision (EU) 2024/1983 on 18 July 2024, the NMHH prepared the legislative amendments necessary for the first phase of the implementation of the Decision. With the NFFF amendment in force as of 28 November 2024, the band was designated for MFCN applications and the main technical requirements for the use of the band were defined. If there is a specific demand for the use of the band for MFCN, the band may be opened once the band usage conditions and spectrum management requirements have been clarified.

⁹ CEPT: European Conference of Postal and Telecommunications Administrations

¹⁰ CEPT Report 82 – Report from CEPT to the European Commission in response to the Mandate “to develop least restrictive harmonised technical conditions suitable for next-generation (5G) terrestrial wireless systems for priority frequency bands above 24 GHz” – Harmonised least restrictive technical conditions for the 40.5-43.5 GHz frequency band.

¹¹ ECC/DEC/(22)06: Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 40.5-43.5 GHz

¹² ERC/DEC/(99)15: ERC Decision of 1 June 1999 on the designation of the harmonised frequency band 40.5 to 43.5 GHz for the introduction of Multimedia Wireless Systems (MWS) and Point-to-Point (P-P) Fixed Wireless Systems

¹³ ECC/DEC/(22)05: ECC Decision on the withdrawal of ERC Decision (99)15 on the designation of the harmonised frequency band 40.5 to 43.5 GHz for the introduction of Multimedia Wireless Systems (MWS) and Point-to-Point (PtP) Fixed Wireless Systems

¹⁴ FDD: Frequency Division Duplex

¹⁵ TDD: Time Division Duplex

2. Regulation of the 42 GHz frequency band

2.1. International regulation

2.1.1. ITU

The Radio Regulations for Region 1 include several different service allocations in the 40.5–43.5 GHz frequency band, which are listed in Annex 1 of the NFFF (Table 1). At the 2019 World Radiocommunication Conference (WRC-19), the Radiocommunication Sector of the International Telecommunication Union (ITU-R) amended the Radio Regulations to harmonise the 37.5–43.5 GHz frequency band globally for IMT purposes (RR 5.550B footnote).

	A	B	C	D
1	ALLOCATION TABLE FOR RR FREQUENCY BANDS			ALLOCATION VALID FOR HUNGARY ACCORDING TO RR
2	REGION 1	REGION 2	REGION 3	
534	40.5–41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile 5.547	40.5–41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile Satellite mobile (space-to-Earth) 5.547	40.5–41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile 5.547	40.5–41 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile 5.547
535	41–42.5 GHz	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile 5.547 5.551F 5.551H 5.551I		41–42.5 GHz FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING SATELLITE BROADCASTING Aerial mobile Maritime mobile 5.547 5.551H 5.551I
536	42.5–43.5 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE, with the exception of aerial mobile 5.550B RADIO ASTRONOMY 5.149 5.547		42.5–43.5 GHz FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE, with the exception of aerial mobile 5.550B RADIO ASTRONOMY 5.149 5.547

1 – International allocation of the 42 GHz frequency band (RR)

[Source: NFFF Annex 1]

Among the allocation options set out in the Radio Regulations, the following services are available in Hungary, as defined in Annex 2 of the NFFF: the entire 40.5–43.5 GHz frequency band allocated to the fixed and land mobile service on a primary basis, the 40.5–42.5 GHz sub-band allocated to the fixed satellite (space-to-Earth) service and the 42.5–43.5 GHz sub-band allocated to the radio astronomy service on a primary basis.

2.1.2. CEPT

Following the global IMT identification of the 37.5–43.5 GHz frequency band, preparations for the use of the band for MFCN purposes started at CEPT level, with CEPT countries supporting the use of only the 40.5–43.5 GHz (42 GHz) frequency range for MFCN purposes.

The results of tests carried out under an EU mandate on harmonised technical conditions for the use of MFCN are contained in CEPT Report 82.¹⁶ This was the basis for the adoption of ECC/DEC/(22)06¹⁷ on harmonised least restrictive technical conditions for the 40.5–43.5 GHz frequency band.

In the context of the implementation of MFCN, two ECC Recommendations (ECC/REC/(22)01¹⁸ and ECC/REC/(22)02¹⁹) were published on 18 November 2022, setting out requirements for ensuring compatibility with the fixed satellite service.

In some countries, the band is used for fixed service point-to-point links (based on ECC recommendations), but new deployments of such systems are not supported as the TDD band arrangement defined for MFCN applications is not compatible with FDD fixed service applications.

2.1.3. European Union

On 14 April 2020, the Commission mandated the CEPT to develop the least restrictive harmonised technical conditions for next-generation (5G) terrestrial wireless systems in the ‘primary 5G’ frequency bands above 24 GHz, including the 42 GHz frequency band. This resulted in the publication of CEPT Report 82, which formed the basis for Commission Implementing Decision (EU) 2024/1983 on technical requirements for MFCN systems and ²⁰. Even though the Decision defines block edge masks requirements for the synchronised case, semi-synchronised and unsynchronised operation is also possible, for which guidance is included in ECC Report 307 on the 26 GHz frequency band²¹.

¹⁶ CEPT Report 82 – Report from CEPT to the European Commission in response to the Mandate “to develop least restrictive harmonised technical conditions suitable for next-generation (5G) terrestrial wireless systems for priority frequency bands above 24 GHz” – Harmonised least restrictive technical conditions for the 40.5–43.5 GHz frequency band.

¹⁷ ECC/DEC/(22)06: Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 40.5–43.5 GHz

¹⁸ ECC/REC/(22)01: Guidelines to support the introduction of MFCN in 40.5–43.5 GHz while ensuring, in a proportionate way, the use of FSS receiving earth stations in the frequency band 40.5–42.5 GHz and the use of FSS transmitting earth stations in the frequency band 42.5–43.5 GHz and the possibility for future deployment of these earth stations

¹⁹ ECC/REC/(22)02: Guidelines on measures to facilitate compatibility between MFCN operating in 40.5–43.5 GHz and FSS earth stations receiving in 39.5–40.5 GHz and to prevent and/or resolve interference issues

²⁰ Commission Implementing Decision 2024/1983 of 18 July 2024 on the harmonisation of the 40.5–43.5 GHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services in the Union

²¹ 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

The harmonised technical conditions for the use of the 42 GHz frequency band for terrestrial systems providing broadband electronic communications services are based on the deployment of hotspots and the use of a licensing regime with known locations of MFCN base stations (transmitting and receiving stations), as required by CEPT Report 82 and Commission Implementing Decision (EU) 2024/1983, which was built on the report. In the case of a licensing regime where the location of WBB ECS base stations is not known prior to deployment, additional measures at national level may be necessary to ensure that such services can coexist with other services using that band and adjacent bands, while respecting the least restrictive harmonised technical conditions as defined in the Annex to Commission Implementing Decision (EU) 2024/1983.

2.2. National regulation

According to Annex 2 of the NFFF, in Hungary, the 42 GHz frequency band is allocated to fixed and land mobile service on a primary basis for civil use, and is currently planned for terrestrial systems capable of providing electronic communications services (MFCN systems, including IMT), on the basis of Commission Implementing Decision (EU) 2024/1983 and CEPT Decision ECC/DEC/(22)06. In addition, the 40.5–42.5 GHz sub-band is allocated, with a planned status, to civilian fixed satellite (space-to-Earth) service on a primary basis. The 42.5–43.5 GHz sub-band is allocated, with a designated status, to radio astronomy on a primary basis.

2.3. National regulatory plans

The first phase of the implementation of the Commission Implementing Decision (EU) 2024/1983, published on 18 July 2024, was implemented by the Authority through the amendment of the NFFF, effective from 28 November 2024, which resulted in the designation of the frequency band for MFCN applications and the definition of the main band usage requirements for the design.

According to Commission Implementing Decision (EU) 2024/1983, only TDD systems can be operated as MFCN applications. The new regulation will allow operators to use user blocks of up to 1 GHz. The Decision only contains block edge mask parameters for the synchronised case, but networks operating in user blocks that are adjacent within the frequency range not necessarily need to be synchronised, and, in the case of spatially separated local use, adjacent block interference can be prevented by applying an appropriate degree of geographical separation (see ECC Report 307 on the 26 GHz frequency band for guidance). However, the requirements for block edge masks included in the Decision must still be respected.

If there is a specific demand for the use of the band for MFCN, the frequency band can be opened up once the conditions for obtaining radio spectrum usage rights and for band usage have been clarified, and operators may use the 42 GHz frequency band for the implementation of high-capacity 5G systems. Depending on the indicated demand or demands, the NMHH will consider limiting the number of licences that can be issued and the possibility of a national licensing regime.

3. Use of the 42 GHz frequency band

3.1. Current use

Only a part of the 42 GHz frequency band (42.5–43.5 GHz) is currently designated, and only radio astronomy applications are allowed to be used in this frequency band. Currently, the band is not actually used; however, it is likely that a radio astronomy application planned for a specific site will be introduced in the near future.

3.2. Possibilities for future use

The use of the 42 GHz MFCN frequency band has the potential to provide high-capacity, innovative next-generation wireless broadband electronic communications services (including 5G, 6G) based on small cells and using large block sizes. The frequency band could be used to serve hotspots in urban and suburban areas.

The harmonised technical conditions for the use of the 42 GHz frequency band for terrestrial systems providing broadband electronic communications services are based on the assumption that hotspots are deployed and a licensing regime with known locations of MFCN base stations (transmitting and receiving stations) is used. If there is a need to apply a licensing regime where the location of base stations is not known before deployment, additional measures may be necessary at national level.

In order to clarify the band usage conditions and to establish the rules for the acquisition of rights to use radio spectrum, it is necessary to obtain feedback from market players on their needs regarding the spectrum and potential applications. The use of the band for MFCN must take into account the possible future use of applications under other service allocations of the band and define the compatibility conditions for these applications.

4. Cross-border use of radio spectrum

Hungary has no international coordination agreement with neighbouring countries in the 42 GHz frequency band, and there is no CEPT recommendation for cross-border coordination of MFCN systems operating in the band. When MFCN networks are implemented, bilateral and multilateral international coordination agreements may be initiated to ensure efficient use of spectrum in the border area, or a specific coordination procedure may be undertaken to protect stations in border areas.

5. Radio spectrum fees

The calculation method of the regular radio spectrum fee is defined in NMHH Decree 1/2011 (III. 31.) on frequency reservation and usage fees (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 competitive procedure, for service providing purposes, 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 radio spectrum fee payable for the use of the 42 GHz frequency band is currently not regulated, as this frequency band is not included in Section 20 and Annex 9 of the Fee Decree. The radio spectrum fee for the use of the frequency band requires an amendment to the Fee Decree. The criteria for setting the fees should take into account the conditions for obtaining the rights of radio spectrum use and the conditions of band use, which are established as a result of the market needs assessment.