Band overview
32 GHz frequency band

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Table of contents

[1. Summary 3](#_Toc99619486)

[2. Introduction 4](#_Toc99619487)

[3. Regulation of 32 GHz band 6](#_Toc99619488)

[3.1. International regulation 6](#_Toc99619489)

[3.1.1. ITU 6](#_Toc99619490)

[3.1.2. CEPT 6](#_Toc99619491)

[3.1.3. EU 8](#_Toc99619492)

[3.2. National regulation and band use 9](#_Toc99619493)

[4. National regulatory plans in the 32 GHz frequency band 10](#_Toc99619494)

[4.1. Technical regulatory considerations 10](#_Toc99619495)

[4.1.1. Band and channel arrangements 10](#_Toc99619496)

[4.1.2. Considerations for user blocks and for the management of adjacent block interference 10](#_Toc99619497)

[4.1.3. Aspects related to equipment tuning range 12](#_Toc99619498)

[4.2. Regulation according to the NFFF Decree for the future use of the 32 GHz frequency band 13](#_Toc99619499)

[4.2.1. Radio spectrum management requirements 13](#_Toc99619500)

[4.2.2. Conditions for obtaining right of radio spectrum use and conditions of using the band 14](#_Toc99619501)

[4.2.3. Rules for coexistence of user blocks 14](#_Toc99619502)

[5. Issues related to migration of fixed service systems in the 26 GHz frequency band 15](#_Toc99619503)

[6. Interference issues related to adjacent frequency bands 15](#_Toc99619504)

[6.1. 31.5-31.8 GHz frequency range 15](#_Toc99619505)

[6.2. 33.4-35.2 GHz frequency range 15](#_Toc99619506)

[7. Radio spectrum use in border areas and international coordination 16](#_Toc99619507)

[8. Radio spectrum fees 17](#_Toc99619508)

[Attachment: 32 GHz band arrangement with 28 MHz basic blocks 18](#_Toc99619509)

1. Summary

Making the 32 GHz frequency band available for fixed-site point-to-point and point-to-multipoint systems has become necessary due to the EU obligations to utilise the 26 GHz band for MFCN[[1]](#footnote-1) purposes.

To accelerate digitalisation, the 24.25-27.5 GHz frequency band (known as the 26 GHz frequency band in view of EU regulations) is also a 5G pioneer band. Furthermore, as a result of the decisions of the 2019 World Radiocommunication Conference (WRC-19), the 26 GHz frequency band has been identified for mobile service applications globally.

Accordingly, for the future use of the 26 GHz frequency band, international documents containing basic decisions on utilisation have been made, including EU legal acts establishing an obligation, under which the 24.25–27.5 GHz frequency range shall be designated and made available on a non-exclusive basis for terrestrial systems capable of providing wireless broadband electronic communications services.

Pursuant to Decree No. 7/2015 (XI. 13.) NMHH on the national frequency allocation and the rules of using frequency bands (hereinafter: NFFF Decree), currently fixed point-to-point and point-to-multipoint systems can operate in the 24.5-26.5 GHz frequency band. Network operators have obtained entitlement to radio spectrum use through auction procedures and mainly implement backhaul network links (typically point-to-point) in the frequency band. The entitlements to radio spectrum use expire between 2024 and 2027, the vast majority in 2027.

In the NMHH’s view, it is only possible to make the 26 GHz frequency band available to MFCN if it ensures the possibility to operate backhaul networks by allowing the use of another frequency band − preferably with similar propagation characteristics and available spectrum−. The 32 GHz frequency band has been identified by the NMHH for this purpose. This was discussed with market players at a public consultation in December 2019. As a result of these discussions, the main technical design elements for the conditions for using the 32 GHz frequency band were defined in the NFFF Decree in 2020. Further details are included in the draft amendment to the NFFF Decree, which is currently undergoing technical notification procedure and is expected to be published and enter into force in April 2022.

The early distribution of the 32 GHz frequency band will allow new links to be established in this band, and enable the migration of links currently operating in the 26 GHz frequency band. After the migration, the 26 GHz frequency band will also be vacated. This will remove any further obstacles to meeting the EU obligation in case of market demand, and allow the introduction of MFCN (mostly 5G NR) in the frequency band.

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1. Introduction

Based on the WRC[[2]](#footnote-2)-15 decision, agenda item 1.13 of the WRC-19 discussed the potential for global use of frequency bands suitable for 5G systems. The frequency bands studied included the 26 GHz and 32 GHz frequency bands. On the basis of the technical investigations carried out, WRC-19 has allocated the entire 26 GHz frequency band (24.25-27.5 GHz) to the mobile service and identified it as the band for mobile service applications (IMT[[3]](#footnote-3)) globally, while it rejected the idea of using the 32 GHz frequency band for this purpose.

In addition to the 700 MHz and 3400-3800 MHz frequency bands, the 24.25-27.5 GHz frequency band, i.e. the 26 GHz frequency band (5G pioneer bands), has been identified by the European Commission to facilitate the development of mobile services in line with the RSPG[[4]](#footnote-4)‘s opinion on 5G spectrum issues. Based on this opinion[[5]](#footnote-5), an EU mandate[[6]](#footnote-6) was established on 7 December 2016, inviting the CEPT[[7]](#footnote-7) to study 5G deployment for the bands specified in the document, taking into account current uses.

In addition to the 26 GHz frequency band, the EU mandate identified the 32 GHz and 42 GHz frequency bands as potential 5G frequency bands among those above 6 GHz. These were studied as part of the preparations for the WRC-19. Prior to the WRC-19, it was decided at European level that the introduction of 5G in the 32 GHz frequency band was not recommended due to compatibility issues with other services. In the meantime, EU decisions have been taken to enable the use of the 26 GHz frequency band in a harmonised way, including for 5G purposes. As an implementation obligation, the 26 GHz frequency band had to be made available for wireless broadband electronic communications networks, in particular 5G, by 31 December 2020, depending on market needs. To this end, Decree No. 7/2015 (XI.13.) NMHH on the national frequency allocation and the rules of using frequency bands (hereinafter: NFFF Decree) included terrestrial electronic communications networks (including 5G MFCN systems) as planned applications in the 26 GHz frequency band. Even in the case of market demand, the introduction of 5G in the 26 GHz frequency band will only be effectively an option if it is possible to replace the existing fixed use in another frequency band. For this purpose, the NMHH identified the 32 GHz frequency band, which is similar to, although not exactly the same as, the 26 GHz frequency band in terms of its application, wave propagation characteristics and spectrum amount.

In a significant part of the 26 GHz frequency band identified for 5G, fixed point-to-point and point-to-multipoint systems operate in the 24.5-26.5 GHz frequency range. Right holders mainly operate backhaul network links (typically point-to-point) in the frequency band. The vast majority of entitlements to radio spectrum use will expire in 2027.

Existing studies indicate that the coexistence of fixed service systems currently operating in the 26 GHz frequency band with planned next-generation mobile service systems can lead to compatibility issues, which can only be resolved by setting specific protection conditions, and therefore, if the frequency band is opened up to 5G NR systems, it is essential to provide an alternative frequency band for the operation of fixed service systems. The NMHH identified the 32 GHz frequency band for this purpose. The technical conditions required for the use of this frequency band by fixed service systems are currently available both at international level and in the national regulation (NFFF Decree).

The 32 GHz frequency band has already been designated for fixed service systems in the NFFF Decree, including some of the band use conditions, and further regulatory details and possible amendments are included in the draft amendment to the NFFF Decree, which is currently undergoing technical notification procedure. Similar to the 26 GHz frequency band, entitlement to radio spectrum use can be obtained in the frequency band through competitive procedure and radio spectrum use in the framework of block management will be possible, taking into account the efficient use of radio spectrum. This will allow operators with entitlement to radio spectrum use to install systems at the national level according to their specific needs, which may be suitable for connecting next generation base stations to the backbone network . Increasingly more advanced technologies in microwave systems make it possible to serve new systems in a flexible way as a complement to the optical network.

Under current international regulations, it is possible to use channels with a bandwidth of 112 MHz and 224 MHz in addition to those with 56 MHz. In the case of block management, it must be taken into account that the amount of radio spectrum available for distribution in the frequency band is limited and the upper limit of the size of user blocks determined on the basis of expected needs determines the size of channel bandwidth that can be used. In addition, it is worth considering that the territorial coverage of the entitlement to radio spectrum use acquired in the frequency band is basically nationwide. Based on the above, the NMHH reached the regulatory decision to define the distribution method in the band in a competitive procedure.

1. Regulation of 32 GHz band
	1. International regulation
		1. ITU

The allocation as per the RR[[8]](#footnote-8) for the 31.8-33.4 GHz frequency band is set out in the table below based on Annex 1 to the NFFF Decree.

|   | A | B | C | D |
| --- | --- | --- | --- | --- |
| 1  | TABLE OF FREQUENCY ALLOCATIONS | RR ALLOCATION RELEVANT TO HUNGARY |
| 2  | REGION 1 | REGION 2 | REGION 3 |
| 519 | **31,8–32 GHz** | FIXED 5.547ARADIONAVIGATIONSPACE RESEARCH (deep space) (space-to-Earth)  | **31,8–32 GHz**FIXED 5.547ARADIONAVIGATIONSPACE RESEARCH (deep space) (space-to-Earth)  |
|   |    |  5.547 5.547B 5.548 |   5.547 5.548 |
| 520 | **32–32.3 GHz** | FIXED 5.547ARADIONAVIGATIONSPACE RESEARCH (deep space) (space-to-Earth)  | **32–32.3 GHz**FIXED 5.547ARADIONAVIGATIONSPACE RESEARCH (deep space) (space-to-Earth)  |
|   |    |  5.547 5.547C 5.548 |   5.547 5.548 |
| 521 | **32.3–33 GHz** | FIXED 5.547AINTER-SATELLITERADIONAVIGATION | **32.3–33 GHz**FIXED 5.547AINTER-SATELLITERADIONAVIGATION |
|   |    |  5.547 5.547D 5.548 |   5.547 5.548 |
| 522 | **33–33.4 GHz** | FIXED 5.547ARADIONAVIGATION | **33–33.4 GHz**FIXED 5.547ARADIONAVIGATION |
|   |    |  5.547 5.547E |   5.547 |

* + 1. CEPT

At CEPT level, Recommendation ERC/REC/(01)02[[9]](#footnote-9)includes band and channel arrangement options for the use of fixed service systems. (Figure 3.1.2.1.). As shown in the figure, channel bandwidths created from multiples of 3.5 MHz may be used. The arrangement is the same for channels between 3.5 MHz and 28 MHz, but changes for channels with a bandwidth of 56 MHz and above. The Recommendation was last amended in May 2019 to allow the use of channels with a bandwidth of 224 MHz, which can be formed by merging two adjacent channels with a bandwidth of 112 MHz each (Figure 3.1.2.2.).



Figure 3.1.2.1 Band and channel arrangement options in the 32 GHz band [Source: ERC/REC/(01)02]



Figure 3.1.2.2 Creation of 224 MHz channels in the 32 GHz band [Source: ERC/REC/(01)02]

Recommendation ECC/REC/(11)01[[10]](#footnote-10) provides guidance on the creation and assignment of user blocks for fixed wireless point-to-multipoint systems. The regulatory document makes recommendations for the following factors:

* the size of the basic block is 28 MHz
* based on this, the sizes of assigned user blocks may be multiples of 28 MHz,
* considerations for the use of guard band ranges separating user blocks, and
* the way in which the frequency blocks can be used when different polarizations are used.
	+ 1. EU

There is no harmonised set of EU rules for the frequency band. No harmonisation process has been launched and the NMHH is not aware of any initiative in this regard.

Although an EU mandate[[11]](#footnote-11) was prepared earlier, which identified the 32 GHz frequency band as a possible frequency band for 5G of frequency bands above 6 GHz, which had to be studied with regard to the introduction of 5G, yet it was not among the so-called 5G pioneer bands. Based on WRC-19 preparatory studies, the CEPT did not support the introduction of 5G in the 32 GHz frequency band. As a result of WRC-19 decisions, the 32 GHz frequency band was not identified for IMT, so it is not expected to introduce 5G in that band in the near future, nor to pursue EU harmonisation efforts in that regard.

* 1. National regulation and band use

The applications that may be used in the 31.8-33.4 GHz frequency band are listed in Annex 2 to the NFFF Decree in accordance with the following table:

| **National allocation** | **Rules of use of frequency bands** |
| --- | --- |
| **Application** | **Document** | **Additional rule** |
| **31.8−33 GHz** |  |  |  |  |  |  |  |
| FIXED | 5.5475.547A | C | 1 | D | 32 GHz-band fixed-site digital point-to-point systems | ITU‑R F.1191‑3ERC/REC/(01)02MSZ EN 302 217‑2 | Annex 3, section 2.5Annex 3, section 2.13Annex 3, section 3.13Annex 4 |
|  |  |  | 1 | D | 32 GHz-band digital point-to-multipoint systems | ERC/REC/(01)02, ECC/REC/(11)01MSZ EN 302 326‑2, MSZ EN 302 326‑3 | Annex 3, section 2.13Annex 3, section 3.13Annex 4User stations are exempted from the obligation of individual licensing. |
|  |  |  | 1 | D | FWA |  |  |
| RADIONAVIGATION | 5.548 | J | 1 | C | ASDE |  |  |
| SPACE RESEARCH (deep space) (space-to-Earth) (31.8–32.3 GHz) | 5.548 | C | 1 | P | Applications of the space research service |  |  |
| **33−33.4 GHz** |  |  |  |  |  |  |  |
| FIXED | 5.5475.547A | C | 1 | D | 32 GHz-band fixed-site digital point-to-point systems | ITU‑R F.1191‑3ERC/REC/(01)02MSZ EN 302 217‑2 | Annex 3, section 2.5Annex 3, section 2.13Annex 3, section 3.13Annex 4 |
|  |  |  | 1 | D | 32 GHz-band digital point-to-multipoint systems | ERC/REC/(01)02, ECC/REC/(11)01MSZ EN 302 326‑2, MSZ EN 302 326‑3 | Annex 3, section 2.13Annex 3, section 3.13Annex 4User stations are exempted from the obligation of individual licensing. |
|  |  |  | 1 | D | FWA |  |  |
| RADIONAVIGATION |  | J | 1 | D | ASDE |  |  |

The 31.8-33.4 GHz frequency band is designated for airport surface detection equipment (ASDE) operating in the radio navigation service for joint use[[12]](#footnote-12) on a primary basis, but there is currently no actual use.

The 31.8-33.4 GHz frequency band is also designated for fixed digital point-to-multipoint systems and fixed-site digital point-to-point systems for civil use on a primary basis. The detailed technical rules and band use conditions for fixed service applications are set out in Annex 3 to the NFFF Decree. The regulation is based on Recommendation ERC/REC/(01)02 on band arrangement and channel spacing and Recommendation ECC/REC/(11)01 on block creation as well as specific rules for the 26 GHz frequency band. In defining band arrangement and basic blocks, the NMHH took the cases a) and b) as a basis from among the band and channel arrangement schemes given in Recommendation ERC/REC/(01)02, taking into account the high probability of using channels with wider bandwidths.

In addition, the 31.8-32.3 GHz sub-band is planned for use by civil space research systems on a primary basis (deep space, space-to-Earth).

The entire 31.8-33.4 GHz frequency band is currently empty, there is no licence issued for any type of application.

1. National regulatory plans in the 32 GHz frequency band

The 32 GHz frequency band was designated for fixed point-to-point and point-to-multipoint systems in 2020 based on Recommendation ERC/REC/(01)02 and had been included in the NFFF Decree as a planned application formerly. It would have been possible to use the frequency band earlier, but it was not designated in the absence of market demand. It was designated in 2020 and part of the radio spectrum management requirements and band use conditions were also defined then. Further conditions related to band use are included in the draft amendment to the NFFF Decree, which is currently undergoing technical notification procedure and is planned to be published in the spring of 2022.

* 1. Technical regulatory considerations
		1. Band and channel arrangements

The technical conditions defined by CEPT and the rules for band and channel arrangement are described in Recommendation ERC/REC/(01)02. Basically, channelbandwidths of at least 28 MHz may be used; therefore, the national band arrangement is based on the band arrangement defined for channels with a bandwidth of 56 MHz or more, in particular because the lower and upper guard bands and the duplex gap are too narrow for the arrangement defined for channels with smaller bandwidth (see Figure 3.1.2.1, points c) to f)). Due to the increased data traffic on base stations in mobile networks, the use of high capacity backhaul network links is necessary. As with the 26 GHz frequency band, a large number of backhaul network links are expected to be established in the 32 GHz frequency band. For gigabit links used to meet increased data traffic needs, 112 MHz bandwidth (4 basic blocks) channels are expected to be used. In the case of the band and channel arrangement shown in Figure 3.1.2.1, points c) to f), when using channels with wider bandwidths near the edge of the band, the chance of interference is increased due to insufficient duplex gap size, and out-of-band emission may cause issues. Based on the above, the national regulation is based on the arrangement shown in points a) and b) of Figure 3.1.2.1; the figure illustrating the band arrangement is included in the Annex.

Under current international regulations, it is possible to use channels with a bandwidth of 112 MHz and 224 MHz in addition to those with 56 MHz (see Figure 3.1.2.2). In the case of block management, it must be taken into account that the amount of spectrum available for distribution in the frequency band is limited and the upper limit of the size of user blocks determined on the basis of expected operator needs determines the amount of channel bandwidth that can be used. In addition, it is worth considering that the territorial coverage of the entitlement to radio spectrum use acquired in the frequency band is essentially nationwide, and the overlapping channels with 224 MHz bandwidth in specific cases can only be used with geographical separation, so that a maximum channel bandwidth of 112 MHz can be used according to national regulations (Section 2.5 of Annex 3 to the NFFF Decree).

* + 1. Considerations for user blocks and for the management of adjacent block interference

Section 2.13 of Annex 3 to the NFFF Decree contains the technical and spectrum management conditions for the use of the 32 GHz frequency band.

Recommendation ECC/REC/(11)01 specifies guidelines for fixed wireless point-to-multipoint systems for the creation and assignment of user blocks and sets out the principles to be taken into account when using radio spectrum in the framework of block management. Accordingly, it is advisable to choose the size of the basic block for a bandwidth of 28 MHz, and the user block sizes may be integer multiples of the basic block. The document also provides a recommendation on the size of the guard range (such as the separation band between user blocks) when using point-to-multipoint systems, assuming that they are to be used in the same area, in order to avoid interference without using other interference mitigating methods. According to the recommendation referenced above, the wider channel bandwidth is used, the greater the guard range should be in order to avoid adjacent block interference (it is recommended to use a guard range as large as the bandwidth of the adjacent channels). These recommendations are relevant to the operation of point-to-multipoint systems.

In general, if geographical separation cannot be ensured for point-to-multipoint systems, it is recommended to use either an external guard band (to separate user blocks) or an internal guard band (at the edge of the block within user blocks) in accordance with Recommendation ECC/REC/(11)01. In the latter case, separation can be achieved by choosing the appropriate polarization: using polarization opposite to the polarization used in the adjacent block. Polarisation can be either vertical ('V') or horizontal ('H') and, by default, either can be used within the user block.

The two different separation solutions are illustrated in Figures 4.1.2.1 and 4.1.2.2. When an external guard band is used (Figure 4.1.2.1), a guard band of one basic block separates user blocks suitable for using both polarizations (marked as C). In the case of a guard band within a user block (Figure 4.1.2.2), only polarisation opposite to the polarisation used in the basic block at the edge of the adjacent user block (marked as E) may be used in the basic block at the edge of the user block; however, both polarizations (marked as C) may be used inside the user block. In the latter case, the adjacent operators must consult each other on the use of the basic block at the edge with regard to the polarisation used.



Figure 4.1.2.1 Using an external guard band for separation of user blocks [Source: ECC/REC/(11)01]



Figure 4.1.2.2 Using an internal guard band for separation of user blocks [Source: ECC/REC/(11)01]

Therefore, the use of the separation band between user blocks is especially important when operating point-to-multipoint systems, where typically sectoral antennas are used (with point-to-point systems the chance for interference due to concentrated line radiation is low). At the time when the recommendation was published, the the widest channel bandwidth used by operators was typically 28 MHz, so it was sufficient to use a 28 MHz separation band between user blocks. These principles were applied by the NMHH when making the regulation for the 26 GHz frequency band; accordingly, in the NFFF Decree 28 MHz separation band for 26 GHz fixed service applications was stipulated, where a fixed (external) guard band of one basic block shall be used to separate user blocks that cannot be distributed. In addition to 28 MHz and narrower bandwidth channels, some operators have also started to use 56 MHz bandwidth channels, but typically this has not yet caused any particular issues (although isolated cases did occur) when using the band, mainly because the vast majority of the systems operated are of point-to-point type.

Increasing the channel bandwidth increases the likelihood of adjacent block interference. According to the regulation for the 26 GHz frequency band, a radio spectrum right holder using a channel with a bandwidth wider than 28 MHz at the edge of the user block (or at a frequency distance from the edge of the block that could cause interference to the station used in the adjacent block) is required to take action in the event of adjacent block interference. For the 32 GHz frequency band, due to the need for higher capacity links, the bandwidth of the channels used for transmission is expected to be multiples of 28 MHz (typically 56 and 112 MHz expected); therefore, new technical and spectrum management considerations are needed. In the event of interference, the prioritisation of channels with a bandwidth of 28 MHz and less is not an appropriate solution, nor is the use of a 28 MHz separation band between user blocks sufficient to eliminate the adjacent block interference. Taking into account the above considerations and the nature of the expected use (primarily point-to-point links), the size of the separation band for the 32 GHz band between user blocks is not specified at the legal level in the draft amendment to the NFFF Decree (Annex 3, Section 2.3.11 of the NFFF Decree), which is undergoing the technical notification procedure. The NMHH will stipulate this in the documentation of the planned competitive procedure.

Coordination between stations deployed in the same geographical location may, in some cases, be necessary (in order to use other interference mitigation techniques) so as to avoid interference between adjacent channels.

* + 1. Aspects related to equipment tuning range

With regards to the use of the frequency band, the question may arise whether the tuning range of the equipment covers the whole band or whether a particular type of equipment can only be used in a smaller range. The tuning range of the available equipment may be of interest because the user block of one of the winners may be placed in the middle of the band in such a way that it includes the breakpoint. In an unfortunate case, this may even mean that the right holder cannot use a wider channel bandwidth (e.g. 112 MHz), even though the size of the user block allows it, because the spectrum use is limited by the frequency limit of the tuning range of a particular type of equipment. There are also breakpoints in the 26 GHz frequency band, but this type of issue was not critical there because the vast majority of links operate with 28 MHz and 56 MHz channel bandwidth, respectively.

* 1. Regulation according to the NFFF Decree for the future use of the 32 GHz frequency band
		1. Radio spectrum management requirements

The technical and radio spectrum management requirements for the future use of the 32 GHz frequency band are specified in Sections 2.5 and 2.13 of Annex 3 to the NFFF Decree currently in force and in the amendments to this section of the draft amendment to the NFFF Decree currently undergoing EU technical notification procedure.

Only point-to-point and point-to-multipoint systems with FDD access may be put into operation in the 32 GHz band. The duplex spacing is 812 MHz. The division of the frequency band into sub-bands is listed in Table 4.2.1.1:

|  |  |
| --- | --- |
| **Sub-band [MHz]** | **Name of sub-band** |
| 31 800–31 871 | lower guard band |
| 31 871–32 543 | lower block band |
| 32 543–32 683 | middle guard band |
| 32 683–33 355 | upper block band |
| 33 355–33 400 | upper guard band |

Table 4.2.1 Division of the 32 GHz frequency band into sub-bands

The guard bands cannot be distributed. The lower and upper block bands are divided into 24x28 MHz basic blocks. A user block shall consist of an integer multiple of basic blocks.

The frequency bands of the signal transmission paths for point-to-multipoint systems are listed in Table 4.2.1.2:

|  |  |
| --- | --- |
| **Signal path** | **Block band** |
| user station – central station | upper |
| user station – repeater station |
| repeater station – central station |
| central station – user station | lower |
| central station – repeater station |
| repeater station – user station |

Table 4.2.1.2 Frequency bands of signal transmission paths in the 32 GHz frequency band

* + 1. Conditions for obtaining right of radio spectrum use and conditions of using the band

| **Subject of condition** | **Requirement** |
| --- | --- |
| Purpose of use | providing electronic communications services, electronic communications operations |
| Method of frequency distribution | competitive procedure |
| Maximum amount of frequency range  | a single radio spectrum right holder may have the right of and entitlement to radio spectrum use of up to six basic blocks within the territorial coverage of entitlement to radio spectrum use;radio spectrum right holders belonging to the same business group may have the right of and entitlement to radio spectrum use of up to six basic blocks within the territorial coverage of entitlement to radio spectrum use |
|  | if, after completion of the competitive procedure, any radio spectrum right holder or radio spectrum right holders belonging to the same business group exceed the maximum amount of frequency range, they shall reduce the amount of frequency range belonging to them to at least the maximum amount of frequency range within 1 year from the date the maximum is exceeded. |
| Minimum amount of frequency range  | a radio spectrum right holder shall have entitlement to radio spectrum use for at least two basic blocks |
|  | if a radio spectrum right holder does not have entitlement to radio spectrum use for at least two basic blocks, the minimum amount of frequency range shall be reached within 1 year from the date the minimum frequency range volume is not reached |
| Territorial coverage of entitlement to radio spectrum use | nationwide in case of obtainment of entitlement to radio spectrum use, as a result of a competitive procedure,in case of transfer, smaller geographical unit is also permitted |
| Method of management | block management |
| Band rearrangement | allowed |
| Secondary trading | entitlement to and right of radio spectrum use may be transferred or leased in whole or in part; partial transfer or lease in respect of frequencies may occur per basic block |

Table 4.2.2: Conditions for obtaining right of radio spectrum use and conditions of using the band in the 32 GHz frequency band

* + 1. Rules for coexistence of user blocks

The rules on the separation bands between the individual user blocks (in particular, their necessity, the extent and the possibility of shared use) and the rules on the avoidance and management of the interference between the closest user blocks in the frequency are determined by the documentation of the competitive procedure, the decision establishing the entitlement to radio spectrum use or the administrative contract.

1. Issues related to migration of fixed service systems in the 26 GHz frequency band

Sufficient amount of radio spectrum should be provided for systems currently operating in the 26 GHz frequency band to allow for the efficient operation of fixed service systems in place of the 26 GHz frequency band. The 32 GHz frequency band has been designated for this type of applications.

Therefore, on the basis of the current entitlements to radio spectrum use, the following spectrum amounts are distributed for the right holders:

* Magyar Telekom Nyrt.: 2×168 MHz in total, of which 2×84 MHz will expire in 2024.
* Telenor Magyarország Zrt.: 2×112 MHz
* Vodafone Magyarország Zrt.: 2×168 MHz
* Antenna Hungária Zrt.: 2×112 MHz
* Digi Kft.: 2×56 MHz

A total of 2×616 MHz radio spectrum is distributed in the 26 GHz band, currently among 5 operators.

In case user blocks are assigned without a separation band, 2×672 MHz of radio spectrum is available for distribution in the 32 GHz frequency band with the specified band arrangement. By using separation band, this spectrum amount is reduced. In the case of applying 28 MHz separation block defined for the 26 GHz band, the amount of spectrum that can be distributed depends on the number of right holders obtaining entitlement to radio spectrum use.

1. Interference issues related to adjacent frequency bands
	1. 31.5-31.8 GHz frequency range

In addition to fixed service systems, the 31.5-31.8 GHz frequency range below the 32 GHz frequency band is designated, on a primary basis, to the applications of passive services (Earth exploration-satellite, space research) and radio astronomy stations. Taking into account national radio spectrum use, it can be said that there is currently no use at all in this frequency band, but the use of radio astronomy stations is possible in the near future. In case a radio astronomy station is expected to be put into service in this frequency range, it is worth paying special attention to complying with the requirements for out-of-band emission of 32 GHz fixed service systems in the vicinity of the site.

In addition, the 31.5-31.8 GHz (31 GHz) frequency band is designated also to fixed point-to-point systems on a primary basis, but there has been no use in this frequency band. In case the 31 GHz frequency band will be used by fixed service systems, no interference issue is expected (there is sufficient guard band at the lower part of the 32 GHz band to avoid interference by out-of-band emission).

* 1. 33.4-35.2 GHz frequency range

The frequency range of 33.4-35.2 GHz above the 32 GHz frequency band is planned for space research and designated for non-civil meteorological, speedometer, military and other radars operating in the radiolocation service on a primary basis. The frequency band is a NATO harmonised military band, but there is no actual use at national level and such use is not planned in the near future. Therefore, no interference issues are expected in relation with this adjacent frequency range in the near future.

1. Radio spectrum use in border areas and international coordination

For the 32 GHz frequency band, there is currently no bilateral or multilateral agreement based on the use of preferential frequency blocks which would make the operation of a station in the immediate vicinity of the state border possible without prior coordination.

The HCM Agreement defines the coordination distances from the borderline for fixed service systems in general cases. Based on the agreement, the operation of a fixed station shall normally be coordinated with countries whose state borders are at distances equal to or less than the coordination distance. In the 30-39.5 GHz frequency range, the coordination distance is 30 km.

The ITU register does not contain any notifications of stations operating in the territory of the neighbouring countries. Based on the coordination database related to the HCM Agreement, requests for coordination has been received from Slovakia (610 fixed service links) and Ukraine (9 fixed service links), which were all accepted because we did not have any use in the frequency band at the time of the receipt of those requests.

No coordination request have been received from the other neighbouring countries, but at the request of the NMHH concerning the use of the band, Austria replied that the frequency band in Austria was designated and in use by Austrian mobile operators to establish backhaul network links. 450 point-to-point links are currently in operation in the territory of the country, and cross-border coordination is carried out at the request of the service provider.

According to information from the Croatian, Slovenian and Romanian administrations, none of the countries currently uses the frequency band. Croatia considers it possible to use 32 GHz later for the purpose of relieving congested frequency bands, but not in the near future. In Slovenia, the frequency band has been designated for point-to-point and point-to-multipoint use in accordance with Recommendations ECC/REC/(11)01 and ERC/REC/(01)02, but it is not yet in use. There is information from the Romanian administration that the frequency band is not currently in use, but they plan to open it on a “first-come, first-served” basis in the future.

Generally speaking, in neighbouring countries where the frequency band is used, few stations can be found that may cause interference resulting from their proximity to the state border, and, due to the frequency band’s wave propagation characteristics and the nature of the application (point-to-point links), there is a very low probability of co-channel interference (highly dependent on distance from the borderline, terrain conditions, antenna gain, azimuth angle, site conditions). For this reason, individual coordination on a case-by-case basis may be sufficient if predominantly point-to-point applications are expected to be used in Hungary as well.

1. Radio spectrum fees

The method of calculation for regular radio spectrum fees is prescribed by Decree 1/2011 (III.31.) NMHH on frequency reservation and usage fees (hereinafter: Fees Decree). Pursuant to the NFFF Decree, the right holder acquiring entitlements to radio spectrum use shall pay a monthly band fee, in the case of radio spectrum for service purposes acquired as a result of a competitive procedure, as a result of the extension of the entitlement to radio spectrum use, or as a result of the renewal of the entitlement to radio spectrum use, and resold after acquisition, during the term of the entitlement to radio spectrum use, starting from the earliest date of the validity of the radio licence determined in Section 22(3) of Decree 4/2011 (X. 6.) NMHH on the Rules of Auctioning and Tendering to Acquire entitlements to radio spectrum usage.

In order to determine the band fee payable for the use of the 32 GHz frequency band, the Fees Decree needs to be amended, as this frequency band is not included in Section 20 entitled “Fees payable for bands within the scope of block management” and Annex 9 of the Fees Decree.

Attachment: 32 GHz band arrangement with 28 MHz basic blocks





1. MFCN: Mobile/Fixed Communication Network [↑](#footnote-ref-1)
2. World Radio Conference, WRC [↑](#footnote-ref-2)
3. International Mobile Telecommunication, IMT [↑](#footnote-ref-3)
4. Radio Spectrum Policy Group (RSPG) – (Established by Commission Decision 2002/622/EC of 26 July 2002 establishing a Radio Spectrum Policy Group, it is an advisory group dealing with European strategic issues of the radio spectrum.) [↑](#footnote-ref-4)
5. <http://rspg-spectrum.eu/wp-content/uploads/2013/05/RPSG16-032-Opinion_5G.pdf> [↑](#footnote-ref-5)
6. <https://digital-strategy.ec.europa.eu/en/library/radio-spectrum-cept-mandates>

Mandate to CEPT to develop harmonised technical conditions for spectrum use in support of the introduction of next-generation (5G) terrestrial wireless systems in the Union [↑](#footnote-ref-6)
7. Conférence européenne des Administrations des postes et des télécommunications - European Conference of Postal and Telecommunications Administrations (CEPT) [↑](#footnote-ref-7)
8. Radio Regulation [↑](#footnote-ref-8)
9. Preferred channel arrangements for fixed service systems operating in the frequency band 31.8 − 33.4 GHz [↑](#footnote-ref-9)
10. 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 [↑](#footnote-ref-10)
11. <https://digital-strategy.ec.europa.eu/en/library/radio-spectrum-cept-mandates>

Mandate to CEPT to develop harmonised technical conditions for spectrum use in support of the introduction of next-generation (5G) terrestrial wireless systems in the Union [↑](#footnote-ref-11)
12. In the case of allocation for joint use, the band may be used for both civil and non-civil purposes, but the harmonisation of civil and non-civil radio spectrum management aspects is mandatory [↑](#footnote-ref-12)