

PRELIMINARY CONSULTATION
on the appropriateness of allocating the
2300 - 2335 MHz sub-band
for broadband wireless electronic communications services

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I. Purpose of the consultation

The public consultation initiated through this document aims at gathering the views of all stakeholders on the opportunity of designating and allocating the 2300-2335 MHz sub-band in the 2300-2400 MHz band for terrestrial systems capable of providing broadband wireless electronic communications services.

The National Authority for Management and Regulation in Communications (hereafter *ANCOM* or the *Authority*) seeks to obtain relevant information in order to identify the level of interest from the market in the use of the 2300-2335 MHz sub-band in view of provision of public networks and of broadband electronic communications services.

The consultation also encourages the entities interested in acquiring usage rights in the above-mentioned sub-band to express their views and arguments on the means and conditions for granting these rights, respectively on a series of technical and economic aspects which are related to the spectrum resource access, such as: minimum spectrum requirements, limitation of the amount of radio frequency usage rights that can be granted (number of licences), area of services provision, validity of the rights, coverage obligations associated to the licences, type of procedure for awarding the usage rights and information on the licence fee for obtaining the usage rights.

Not in the least, the public consultation initiated by the Authority seeks to gather the stakeholders' opinions on the need and opportunity to hold a selection procedure to award the usage rights in the 2300-2335 MHz sub-band.

This endeavour of the Authority was triggered by a letter of intent received in September from a provider of public networks and of electronic communications services, recently notified to ANCOM according to the provisions of the general authorisation regime in force. By means of the mentioned letter, the Authority was informed on the interest of providing publicly available electronic communications services in Romania, using LTE-TDD technology, in the 2300-2335 MHz sub-band, mainly in rural areas which do not benefit, in the respective provider's opinion, of electronic communications services of proper quality or do not benefit at all of electronic communications services.

The Authority is constantly preoccupied with ensuring a transparent framework of dialogue and interaction with the electronic communications sector in respect of its decisions with heavy national impact in the field of radio spectrum management – a limited public resource whose use must ensure a maximum of benefits both for the society, as a whole, and for any directly interested person. Therefore, after a thorough analysis of the aforementioned letter of intent, ANCOM decided to launch hereby a questionnaire which is mainly meant to gather the opinions of all stakeholders interested in the use of the frequency band under discussion in view of the provision of public networks and of electronic communications services.

The Authority has used this type of questionnaires in the past (the most recent have been the subject of the public consultation held in 2017, in relation to the opportunity of awarding usage rights in the 694-790 MHz, 791-796 MHz / 832-837 MHz, 1452-1492 MHz, 2530-2570 MHz / 2650-2690 MHz, 3410-3420 MHz / 3510-3520 MHz, 3450-3465 MHz / 3550-3565 MHz bands, respectively in 2018, in relation to the need of holding selection procedures for awarding usage rights in the VHF (174-230 MHz) and UHF (470-694 MHz) bands for terrestrial digital radio-broadcasting services, namely T-DAB and DVB-T, within the purpose of ensuring the transparency and predictability of the decision-making process and an appropriate substantiation of the decision to be made.

The Authority's initiative is legally supported, among others, by the provisions of art. 14 paragraph (4) and art. 25 of Government Emergency Ordinance no. 111/2011 on electronic communications, approved, with amendments and completions, by Law no. 140/2012, with subsequent amendments and completions, since it is clear that, in the context presented by the provider which declared its intent, the number of licences that could be granted in the band under

discussion is limited, from the reasons specified in art. 25 paragraph (1) of the previously mentioned normative act. In addition, the Authority's initiative is validated by art. 25 paragraph (2) letter b) of the Government Emergency Ordinance no. 111/2011, which stipulates that the Authority must grant all stakeholders the possibility to express their opinions on the measure of limiting the number of licences.

The opinions argued and intentions expressed during the public consultation will feed into substantiating the decision on the future use of the radio spectrum available in the envisaged sub-band which would be conducive to an efficient use of the radio spectrum resource and to the greatest socio-economic benefits.

In keeping with the outcomes of the present consultation, ANCOM will thereafter determine the steps to be taken further concerning the award of usage rights in view of the provision of electronic communications services in the 2300-2335 MHz sub-band, including the need to correspondingly amend the National Table for Frequency Band Allocation¹, considering that the envisaged type of application is not among those possible ones in the sub-band under discussion.

II. Context

1) Frequency bands harmonised at European level (EU) for the provision of electronic communications services and their use in Romania

It is well known from the previous consultations conducted by ANCOM for awarding frequency usage rights in several frequency bands (700 MHz, 800 MHz, 1500 MHz, 2600 MHz, 3400-3800 MHz and 26 GHz) that the spectrum harmonised at European level for terrestrial systems capable of providing broadband electronic communications networks includes the following frequency bands: 703-733/758-788 MHz (the 700 MHz band), 791-821/832-862 MHz (the 800 MHz band), 880-915 MHz/925-960 MHz (the 900 MHz band), 1427-1517 MHz (the 1500 MHz band), 1710-1785/1805-1880 MHz (the 1800 MHz band), 1920-1980/2110-2170 MHz (the 2100 MHz band), 2500-2690 MHz (the 2600 MHz band), 3400-3800 MHz and 24.25-27.5 GHz (the 26 GHz band).

The use of the frequencies in the harmonised bands above is technologically-neutral, which means that any of the technologies available for these bands (2G, 3G, 4G, 5G) can be used for the provision of electronic communications services, under the condition that the provisions of the relevant decisions of the European Commission on the harmonised technical requirements applicable to each frequency band are observed. The said decisions are adopted on grounds of Decision no. 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community.

The 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2600 MHz and 3400-3800 MHz bands are largely allocated to the operators of mobile/fixed communications networks from Romania, except for parts in the 800 MHz, 2600 MHz and 3400-3800 MHz bands, which remained unawarded following the selection procedures held by the Authority between 2012 and 2015.

The current spectrum allocations among the operators of mobile/fixed public communications networks from Romania in the harmonised bands is presented in the document "*ANCOM Position Paper on awarding usage rights for the frequencies available in the 694-790 MHz, 790-862 MHz, 1427-1517 MHz, 2500-2690 MHz, 3400-3800 MHz and 24.25-27.5 GHz bands*", which was publicly consulted in 2019 (available here: https://www.ancom.ro/consiliul-consultativ-7-iunie-2019_6112).

The aforementioned Position Paper also includes information on the spectrum available in the 700 MHz, 800 MHz, 1500 MHz, 2600 MHz and 3400-3800 MHz bands, to be put at the disposal of the providers of public networks and of electronic communications services.

¹ The National Table for Frequency Band Allocation (NTFA) was approved by Government Decision no. 376/2020.

Thus, the following sub-bands are available: an FDD sub-band of 2x5 MHz (one duplex of 2x5 MHz width) in the 800 MHz band, an FDD sub-band of 2x40 MHz (8 duplex blocks of 2x5 MHz width each) in the 2600 band, respectively a TDD sub-band of 90 MHz width (18 unpaired blocks of 5 MHz width each) in the 3400-3800 MHz band.

The spectrum available in the sub-bands remained unawarded in the 800 MHz, 2600 MHz and 3400-3800 MHz bands, as well as in new frequency bands harmonised at European level for terrestrial services capable of providing electronic communications services, respectively in the 700 MHz and 1500 MHz bands will make the object of a competitive selection procedure (auction) to be held in the following period. As well, new usage rights in the entire 3400-3800 MHz (400 MHz available) band, valid on a long-term, starting 2026, will be awarded within the auction.

The draft auction documentation was publicly consulted and is available on the Authority's website (here: <https://www.ancom.ro/formdata-269-49-377> and here: <https://www.ancom.ro/formdata-269-49-383>).

2) Status of 2300 MHz band harmonisation at global and European level

The 2300-2400 MHz band (*2300 MHz band*), which includes the 2300-2335 MHz sub-band, is globally identified in all the three Regions of the International Telecommunication Union (ITU) for use in the land mobile service for the purpose of implementation of IMT (International Mobile Telecommunications) systems, according to the ITU Radio Regulations – 2016 edition, in force.

The use of the 2300-2400 MHz band is also harmonised at the level of the European Conference of Postal and Telecommunications Administrations (CEPT), by ECC Decision (14)02, which sets the European harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for mobile/fixed communications networks (MFCN).

In the CEPT countries the 2300 MHz band has various uses and, consequently, one of the purposes of the ECC Decision on the 2300 MHz band was to provide harmonised technical and regulatory conditions for the use of this band for MFCN, while allowing the administrations to maintain the use of the band by the existing services, in keeping with the national needs.

The band in question is not however harmonised at the EU level for terrestrial systems capable of providing broadband electronic communications services.

The European Commission elaborated a draft implementing decision for the harmonisation of the 2300-2400 MHz band, based on the CEPT 55 Report. Nevertheless, the decision could not be adopted in 2015 because of the opposition of some of the Member States.

3) Availability of equipment in 2300 MHz band

Whereas in Europe the interest for using the 2300 MHz band to provide broadband communications services is relatively recent, at global level the band is already used at a large scale (i.e. in Asia, Australia and Africa).

GSA (*Global Mobile Suppliers Association*) identified a large availability of LTE equipment capable of operating in the 2300 MHz band (5479 LTE equipment available in November 2019), while 5G equipment has just begun to become available in the same band.

The table below summarizes the availability of 4G and 5G equipment capable of operating in various bands harmonised at global level, valid at the end of November 2019, according to GSA.

Frequency band ²	4G equipment (November 2019)	5G equipment (November 2019)
700 MHz FDD (B28, FDD) ³ (n28 FDD) ⁴	2098	12

² The bands in the table are thus identified by the 3GPP (The 3rd Generation Partnership Project) The brackets specify the number of the 4G and 5G band assigned by 3GPP for each band, according to the 3GPP standards relevant for each technology.

³ identification of the LTE band acc. to 3GPP TS 36.101;

⁴ identification of the NR band acc. to 3GPP TS 38.101.

800 MHz	(B20, FDD)	(n20 FDD)	6305	9
900 MHz	(B8, FDD)	(n8, FDD)	5617	6
1500 MHz	(B32, FDD, SDL)		123	--
1800 MHz	(B3, FDD)	(n3, FDD)	10735	11
2100 MHz	(B1, FDD)	(n1, FDD)	8905	11
2300 MHz	(B40, TDD)	(n40, TDD)	5479	3
2600 MHz	(B7, FDD)	(n7, FDD)	9351	9
	(B38, TDD)	(n38, TDD)	4156	4
	(B41, TDD)	(n41, TDD)	4164	36
3600 MHz	(B42, TDD)	(n77, TDD)	279	24
	(B43, TDD)	(n78, TDD)	205	39
26 GHz		(n257, TDD)	--	5

As one may notice, a large number of 4G LTE equipment is available in all the bands in the table, except for the 26 GHz band, and their number keeps growing, while the number of available 5G equipment is a lot lower.

The 2300 MHz band is intensely used for broadband mobile communications, in particular in the Asia-Pacific telecommunication Region (ITU Region 3), where IMT systems have been significantly implemented in countries such as India, China, Indonesia, which led to the development and enlargement of the radio equipment ecosystem for the 2300 MHz band.

4) Status of awarding the 2300 MHz band for MFCN in Europe

The interest for the 2300 MHz band is growing in Europe, some European countries awarding already or planning to award the band for mobile communications in the near future. The radio ecosystem for this band is already consolidated and the harmonised usage conditions have many aspects in common with the 2600 MHz TDD band and the 3400-3800 MHz TDD band, respectively.

UK is the first country from Europe that awarded usage rights in the 2300 MHz band for MFCN, allocating 40 MHz therefor in 2018.

The regulatory authority in UK (Ofcom) also plans to introduce spectrum sharing and open access to the spectrum in the 3800-4200 MHz/1800 MHz/2300 MHz bands for the private operators and players in the vertical industries, based on the "*first come, first served*" principle.

Denmark has already awarded 60 MHz in the 2300 MHz band, within an auction held in March 2019 for awarding usage rights in the 700 MHz, 900 MHz and 2300-2400 MHz bands. Of the 100 MHz available in the 2300 MHz band that were put out for auction, 40 MHz remained unawarded.

In the last two years, an increased interest for using the 2300 MHz in view of providing MFCN and broadband communications services was noticed in many European countries.

Thus, the regulatory authority in Austria (RTR) carried a public consultation in 2019 on awarding usage rights in the 26 GHz and 2300 MHz bands. RTR intends to award usage rights in the 2300 MHz band with validity beyond 2020, depending on the market demand and the spectrum availability.

The regulatory authority in Ireland (ComReg) launched in June 2019 a public consultation on awarding usage rights in several frequency bands, namely: 700 MHz, 2100 MHz, 2300 MHz (100 MHz available) and 2600 MHz. In May 2020, ComReg published a draft information memorandum and a draft regulation for the holding of the multi-band spectrum auction. Following the comments received from stakeholders on the auction documentation, ComReg has decided to extend the consultation and intends to publish the final response and the decision on the award of the usage rights in the bands in question in the fourth quarter of 2020, while the final information memorandum on the auction is to be published in the first quarter of 2021.

The regulatory authority in Slovenia (AKOS) published in August 2020 the auction documentation in view of awarding radio frequencies for the provision of publicly available mobile communications services in several frequency bands, including the 2300 MHz band, respectively 700 MHz, 1500 MHz, 2100 MHz, 2300 MHz, 3400-3800 MHz and 26 GHz. The documentation is

currently put up to public consultation, whereas the final version will be published on AKOS website as soon as the consultation is over.

The regulatory authority in Sweden (PTS) launched in April 2020 the invitation to take part in the auction for awarding frequencies in the 3400-3800 MHz and 2300 MHz band. The auction is planned to start in November 2020, while the bids were submitted until 30 June 2020, at the latest. The spectrum available in the 2300 MHz band auctioned off is 80 MHz (maximum 8 national licences).

The regulatory authority in Norway (Nkom) conducted a public consultation during June-September 2020 on awarding usage rights in the 2600 MHz and 3400-3800 MHz bands. The auction is planned to take place in the first half of 2021. The initial proposal, launched for consultation in June 2019, concerned the allocation of the 2600 MHz and 3400-3800 MHz bands simultaneously with the 700 MHz SDL, 1500 MHz SDL and 2300-2400 MHz bands. In the revised documentation recently consulted, the Norwegian authority came back on the proposal to include the 700 MHz SDL, 1500 MHz SDL and 2300 MHz bands in the auction to be held in 2021.

Nkom plans to award soon usage rights in the 2300 MHz band for mobile communications, valid beyond 2022, when the existing licences awarded for video PMSE in this band expire.

Nkom deems the 2300 MHz band is potentially substitutable to the 3400-3800 MHz band, on the long run, for the provision of 5G services. Nkom also envisages granting local/regional licences in this band as an alternative to the local/regional licences in the 3400-3800 MHz band. The effectively available spectrum in the 2300 MHz band is 80-90 MHz.

Some communications administrations, such as France and Spain, indicated that, given the existing military uses in the 2300 MHz band, this could be used in licensed shared access regime ("LSA") based on an agreement between the users.

5) Technical characteristics of 2300 MHz band

The characteristics of radio wave propagation in the 2300 MHz band are similar to those in the 2600 MHz band, given the relative proximity between the two bands in the radio spectrum. In addition, just as the unpaired portion of the 2600 MHz band meant for TDD use (2600 MHz TDD), the 2300 MHz band may be considered a capacity band from the perspective of operation of a broadband mobile/fixed network, bearing in mind the larger bandwidth available in the TDD operation mode. The additional capacity offered by the availability of the TDD spectrum has also the role of handling the asymmetric increase of data traffic in downlink (from base station to mobile terminal) as opposed to that in uplink (from mobile terminal to base station).

As well, the harmonised technical conditions for the use of the 2300 MHz band are relatively similar to those of the 2600 MHz TDD band.

Bearing in mind the similar characteristics with those of the 2600 MHz TDD band, the 2300 MHz band is adequate for the provision of broadband mobile/fixed communications networks, as such networks have been significantly implemented in this band worldwide, as previously shown.

For both frequency bands there is, as shown in Section II.3, a sufficiently developed equipment ecosystem.

The characteristics of the 2300 MHz band, specified above, render this band attractive for the provision of broadband mobile communications services, considering also the global standardization by 3GPP of equipment in this band, the network implementations existing in the Asia-Pacific region and not only here, as well as the large availability of equipment.

III. Regulatory framework applicable to 2300 MHz band

At global level

The ITU Radio Regulations (also called ITU RR), 2016 edition in force, provide assignments on a first basis for fixed and mobile services for the 2300-2400 MHz band in Region 1 (of which Romania is a party), as well as assignments on a secondary basis for amateur and radio location services.

The footnote 5.384A applies for the mobile service, stipulating that the frequency bands 1710-1885 MHz, **2300-2400 MHz** (our emphasis) and 2500-2690 MHz (or parts thereof) are identified for implementing IMT systems by the Administrations who wish so, in accordance with the provisions of Resolution 223 (rev. CMR-15). This identification does not set any priority in the ITU RR nor does it preclude the use of these frequency bands by any applications of other services to which they are allocated.

Among others, Resolution 223 (rev. CMR-15) specifies the identification for IMT of the bands enumerated above as valid for the IMT terrestrial component.

At regional level – CEPT

The ERC 25 Report comprises the European common assignments of frequency bands (hereinafter called the ECA Table) and provides the same assignments for the 2300-2400 MHz band as the ITU RR, namely: assignments on a primary basis for fixed and mobile services, as well as assignments on a secondary basis for amateur and radio location services. In the case of the mobile service, the footnote 5.384A (explained above) applies.

The applications possible in Europe in the 2300-2400 MHz band, according to the ECA Table, are listed below:

- a) MFCN, by shared use of spectrum, in accordance with Decision ECC/DEC/(14)02 and Recommendation ECC/REC/(14)04;
- b) PMSE applications (radio equipment used for audiovisual programme making and broadcasting of special events), according to Recommendation ERC/REC 25-10; it regards, in particular, wireless video cameras and wireless temporary video links (portable or mobile);
- c) aeronautical telemetry applications, according to ERC/REC 62-02 Recommendation, in some CEPT countries;
- d) military applications (aeronautical, terrestrial, maritime and telemetry/remote military systems);
- e) amateur applications, in the 2300-2450 MHz band (amateur service having a secondary status).

The ECC/DEC/(14)02 Decision of 27.06.2014 sets the harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for MFCN systems (Mobile/Fixed Communications Networks), including broadband wireless systems. Within the text of the decision it is explicitly mentioned that the band in question is designated for MFCN based on assessments made on national level and taking into account, at the same time, the already existing uses in this band across CEPT countries.

Thus, Annex 1 to the above-mentioned Decision sets a harmonised frequency arrangement for the respective band, Annex 2 includes the least restrictive technical conditions for MFCN (base stations and terminal equipment) and Annex 3 contains action lines, guidelines for creating the framework for shared use of the 2300-2400 MHz band, at national level, by MFCN and the other applications traditionally using the band under discussion.

The ECC/REC/(14)04 Recommendation of 30.05.2014 treats the cross-border coordination for mobile/fixed communications networks (MFCN) and between MFCN and other systems in the frequency band 2300-2400 MHz. Thus, Annex 1 to the Recommendation includes the principles and the field strength levels that should be included in the bilateral/multilateral agreements on the cross-border coordination between MFCN, while Annex 2 contain guidelines for the conclusion of bilateral/multilateral agreements on the coordination between MFCN and other systems using the 2300-2400 MHz band in the neighbouring countries.

At regional level – EU

Although there is a CEPT decision harmonising the use of the 2300-2400 MHz band for MFCN, it is easily noticeable (even in the text of the respective CEPT decision) that the national uses of the band in question are complicated and vary significantly from one country to another. The CEPT/ECC decisions are implemented by CEPT countries on a voluntary basis. They are not mandatory, as it is the case of the European Commission's implementing decisions adopted in view of harmonising the use of radio spectrum in the European Union.

Taking into account the extremely different uses of the frequency band 2300-2400 MHz, in the EU Member States, the debates that took place in the Radio Spectrum Committee (RSC) during 2014-2015 – in view of elaborating and adopting an EC decision for harmonising the respective band – failed and no satisfying compromise could be reached for all EU States.

Consequently, at this point, the 2300-2400 MHz band does not have a harmonised use in the European Union, as previously highlighted.

At regional level – NATO

As regards Europe, the ECA Table includes footnote ECA36 as applicable to frequency band 2300-2400 MHz, which provides that this band (among many others) is harmonised by NATO and NATO Member States for military use, as indicated in the NATO Joint Civil/Military Frequency Agreement (NJFA), 2014 edition.

Moreover, the ECA Table explicitly includes military applications in the respective band, as already shown above. These are taken over from NJFA 2014.

At national level

The National Table for Frequency Band Allocation (NTFA), approved by Government Decision no. 376/2020 (published in the Romanian Official Journal no. 427 and 427bis of 21.05.2020), provides the same assignments for the 2300-2400 MHz band as ITU RR and the ECA Table, namely: assignments on a first basis for fixed and mobile services, as well as assignments on a secondary basis for amateur and radiolocation services. The footnote 5.384A (already explained previously herein) applies to the mobile service.

The applications possible in Romania in the frequency sub-band 2300-2335 MHz, with non-governmental use according to the NTFA in force, are listed below:

- a) PMSE applications (radio equipment enabling audiovisual programme making and broadcasting of special events) in the 2290-2335 MHz band, according to ERC/REC 25-10 Recommendation; it regards, in particular, wireless video cameras and wireless temporary video links (portable or mobile);
- b) MMDS applications, in 2250-2400 MHz band, only in rural areas;
- c) Ultra-wide band applications (generic UWB, in 1600-10600 MHz band), according to ECC/DEC/(06)04 Decision and European Commission Decision no. 2007/131/EC, as amended by Decisions 2009/344/EC, 2014/702/EU and (EU) 2017/1438;
- d) Amateur applications, in 2300-2450 MHz band (amateur service having secondary status).

The applications possible in Romania in the frequency sub-band 2335-2400 MHz, with governmental/non-governmental use according to the NTFA in force, are listed below:

- a) MMDS applications, in the 2250-2400 MHz band, only in rural areas;
- b) military applications (aeronautical, terrestrial, maritime and telemetry/remote military systems);
- c) Ultra-wide band applications (generic UWB, in the 1600-10600 MHz band), according to ECC/DEC/(06)04 Decision and European Commission Decision no. 2007/131/EC, as amended by Decisions 2009/344/EC, 2014/702/EU and (EU) 2017/1438;
- d) amateur applications, in the 2300-2450 MHz band (amateur service having secondary status).

The 2335-2400 MHz sub-band is also applied footnote ECA36 (previously detailed) concerning military applications.

The generic UWB applications operate in licence-exempted regime, in compliance with the RO-IR UWB 01 radio interface technical specification and include: materials detection, analysis of construction materials, location and tracking 1 (LT1), UWB radio equipment installed on-board aircraft, cars and railway vehicles, other generic uses.

The MMDS (Microwave Multipoint Distribution Systems) applications – with the MVDS (Microwave Video Distribution Systems) version – refer to conveyance of audio-visual programme services, by means of point-multi-point systems in the fixed service, between the ends of the CATV (cablevision) electronic communications networks situated in different places and (in most cases) localities. It concerns one-way connections usually made from a central (nodal) point to the network ends of a local, at a distance CATV network (making possible including a cascade type network topology).

Thus, MMDS represents a viable alternative to the installation of cables or fibre optic on long and very long distances, under variable and difficult landscape and terrain, this solution being costly and hard to implement.

In our country, the MMDS application uses the radio spectrum by means of the MMDS transmission lines which are microwave fascicles from one sender to one or several receivers, connected to the electronic communications networks meant for the broadcasting/retransmission of audio-visual programme services (CATV network ends), situated in the coverage area of the main radiation lobe of the emission antenna.

As one can easily notice, from a comparative analysis of the regulatory framework at a global, regional, respectively national level, the 2300-2335 MHz sub-band (which is the object of this public consultation) cannot be used in Romania, at this moment, for the provision of public networks and of electronic communications services by means of MFCN (referred to in the intention letter received by the authority, letter which based this public consultation process).

IV. History and current use of 2300-2335 MHz sub-band

Historically, the 2300-2335 MHz sub-band did not have (and does not have at present) uses that frame into the mobile service or into the radio location service.

The uses framing into the fixed service are detailed below.

MMDS applications

Until 2003, the 2290-2335 MHz band (with non-governmental use) was designated, with non-priority use, for MMDS systems, this being the main use of this band until the respective time. In time, it was assessed that 45 MHz were insufficient for the CATV operators' transmission needs, who wanted to convey a large number of television programmes on long distances.

Once with the 2003 edition of the NTFA, and taking into account the requests (numerous at the respective time) to identify an extended portion of radio spectrum for the implementation and roll out in good conditions of MMDS systems, the relevant ministry decided to designate for these systems a substantially larger amount of radio spectrum, keeping as "pivot" the initial sub-band, where the MMDS systems received priority use.

Thus, starting September 2003, the frequency band 2250-2400 MHz was designated for MMDS systems and was to be shared with other radiocommunication stations and networks, as follows:

- 1) in the 2250-2290 MHz portion, by geographic sharing with radio relay lines of small/medium capacity with permanent character;
As this concerned two applications (MMDS and radio relay lines) of the fixed service, with primary status in the band, it was established a priority use for radio relay lines against MMDS networks. Thus, the MMDS networks must not cause harmful interferences to the radio relay lines and cannot request radio electric protection from radio relay lines.
- 2) in the 2290-2335 MHz portion, by geographic sharing with PMSE applications (transportable radio relays equipment, including wireless video cameras);
Priority use was given to MMDS networks before PMSE applications. Thus, the PMSE equipment must not cause harmful interferences to the MMDS networks and may not request radio electric protection from MMDS networks.
- 3) In the 2335-2400 MHz portion, by exclusive geographic sharing with governmental (military) equipment, because certain exclusion geographic areas on the national territory were established for the MMDS application (areas where MMDS cannot be used).

Flexibility was thus created in the use of the radio spectrum given that the operators interested in the installation and use of MMDS networks can choose to either use the initial MHz (with priority use) or 85 MHz (by concatenation of the first two sub-bands) or the entire available amount of spectrum (150 MHz with the keeping, however, of a guard sub-band in the upper band, to prevent harmful interferences caused by the WiFi equipment and by the other types of short-range devices (SRD) which operate in licence-exempted regime in the 2400-2483.5 MHz band).

The NTFA in force took over the prioritisation scheme mentioned above, this being valid at present, under the conditions described above.

After an initial period of intense use of MMDS networks at national level, a decrease of interest in this type of systems has been noticed in the last years. Many licence holders have waived their rights to use the radio spectrum for MMDS networks in the past five years, being also registered very few requests for new networks of this type, the last request for a new network dating from 2017.

At this moment there are 11 MMDS networks for which their operators hold licences in force in the 2250-2400 MHz band, as detailed in the table below:

No.	MMDS emission point "city" or "village/(commune)"	County	MMDS reception points "village/(commune)" or 'locality/(town)'	County	Validity	Actual band used
1.	Șibot village/ (Șibot commune)	AB	village Balomiru de Câmp / (commune Șibot)	AB	01.09.2024	2250-2392 MHz
			village Acmaru / (commune Blandiana)	AB		
2.	village C.A. Rosetti / (commune C.A. Rosetti)	BZ	village Lunca / (com. C.A. Rosetti)	BZ	29.04.2025	2250-2392 MHz
3.	village Mihăilești / (com. Mihăilești)	BZ	village Mărgineanu / (commune Mihăilești)	BZ	29.04.2025	2250-2392 MHz
			village Movila Banului / (commune Movila Banului)	BZ		
			village Cioranca / (commune Movila Banului)	BZ		
			village Florica / (com. Florica)	BZ		
4.	village Cârcea / (commune Cârcea)	DJ	village Robănești de Sus / (commune Robănești)	DJ	17.12.2024	2250-2392 MHz
			village Coțofenii din Față / (commune Coțofenii din	DJ		

	village Robănești de Sus / (commune Robănești)	DJ	Fată)		17.12.2024	2250-2392 MHz
			village Leu / (com. Leu)	DJ		
			village Popânzălești / (commune Drăgotești)	DJ		
			village Bușteni / (commune Murgăși)	DJ		
5.	village Malu / (commune. Malu)	GR	village Izvoru / (commune Gogoșari)	GR	05.07.2025	2250-2392 MHz
6.	village Moțca / (com. Moțca)	IS	village Zvorănești / (commune Timișești)	NT	20.01.2024	2250-2392 MHz
7.	Strehaia **	MH	Comanda / (Strehaia)	MH	28.06.2025	2250-2335 MHz
			Lunca Banului / (Strehaia)	MH		
8.	Strehaia **	MH	Ciochiuța / (Strehaia)	MH	28.06.2025	2250-2335 MHz
9.	village Luncavița / (commune Luncavița)	TL	village Rachelu / (commune Luncavița)	TL	13.11.2022	2250-2392 MHz
10.	village Dragomirești / (commune Dragomirești)	VS	village Rădeni / (commune Dragomirești)	VS	08.10.2025	2250-2392 MHz
			village Belzeni / (commune Dragomirești)	VS		
			village Doagele / (commune Dragomirești)	VS		
11.	village Năruja / (commune Năruja)	VN	village Sahastru / (commune Nereju)	VN	13.04.2023	2250-2392 MHz

** distinct places in the same locality

The Authority intends, in principle, to keep unchanged in the future the regulatory framework for the use of the MMDS systems, considering that this solution is still viable in the case of remote localities, where the CATV electronic communications networks are hard to physically connect to the source of signal of the networks used by the holders of the retransmission authorisations issued by the National Audiovisual Council.

Certainly, depending on the results of this public consultation, regarding the introduction of MFCN systems in the 2300-2335 MHz sub-band and their effective practical implementation, it will be necessary to identify solutions of coexistence in the sub-band between the MMDS and the MFCN systems (bearing in mind including that the fixed and mobile services have co-primary status in the respective sub-band).

PMSE applications

The frequency band 2290-2335 MHz (with non-governmental use) was also designated over the time for PMSE applications, with non-priority use.

Generally speaking, the PMSE applications concern links point-area or point-to-point (fixed, mobile or portable), preponderantly one-way (but two-ways also sometimes), analogue or digital, with temporary occasional character, intended for:

- broadcasting sports, cultural-artistic, conferences or various meetings or other special, occasional or regular events on-the-spot, as well as

- making and broadcasting news, reportages, shows and other types of audiovisual programmes produced outside studios, from the places where these special events are taking place (respectively the place where the audio-visual programmes are made) to TV / radio studios.

A wide range of equipment is used for these purposes, and is designed so as to respond, constructively, as well as in terms of viability, to the specific requirements of these radio broadcasting activities.

Basically, the 2290-2335 MHz band is part of a tuning range for PMSE applications in the 2 GHz spectrum, stretching from 2010 MHz to 2500 MHz, according to ERC/REC 25-10 Recommendation.

In our country, two pairs of transportable radio relays held by a TV station are currently in operation with non-priority use (and with the possibility to be placed anywhere on national level), each of them being programmed on carrier frequencies 2297.5 MHz, 2312.5 MHz and 2327.5 MHz, each of the three radio channels having 20 MHz bandwidth.

Although currently the demand for PMSE is low, as one can easily notice, considering the requests of the operators activating in Romania for permanent assignments for PMSE applications, there is a chance of "peaks" of request, that can occur on the occasion of events with high national or even international importance and impact.

This is the reason why ANCOM will keep unchanged in the future the regulatory framework for PMSE applications (which have non-priority use anyway), taking into account that in the tuning range of 2 GHz (mentioned above) there are not sufficient frequency sub-bands that would be suitable to be used for PMSE, with a low risk of harmful interferences (caused by or on PMSE equipment).

V. Questionnaire

ANCOM proposes to take into account, in its preliminary analysis on the appropriateness of designating and allocating the 2300-2335 MHz sub-band (2300-2400 MHz band) for MFCN, the relevant information regarding the following criteria:

- a) the degree of harmonization of the 2300 MHz frequency band at international/European level;
- b) the availability of equipment in the above-mentioned band;
- c) the technical characteristics of the band;
- d) the status of awarding usage rights in the 2300 MHz band in Europe;
- e) the availability of spectrum in the 2300-2335 MHz sub-band in Romania, taking into account the existing applications in the same sub-band or in the adjacent sub-bands, with which the MFCN must coexist.

Taking into account the context presented on the harmonisation and use of the 2300 MHz band at international and European level, the regulatory framework at international, European and national level and the availability of spectrum in the 2300 MHz band in Romania, as well as the availabilities of spectrum for the provision of broadband communications services in the 700 MHz, 800 MHz, 900 MHz, 1500 MHz, 1800 MHz, 2600 MHz, 3400-3800 MHz bands (both the spectrum already allocated and that which will make the object of the future auction), please answer the questions below, arguing your responses.

1) Need and appropriateness of designating and allocating the 2300-2335 MHz sub-band for MFCN

Question no. 1

Keeping into account the context of the technological and regulatory evolution at international level for the 2300 MHz band, as well as the structure of the broadband mobile/fixed communications networks in Romania and the current allocation of radio spectrum in the frequency bands intended for the provision of broadband mobile/fixed communications public networks,

<i>Do you consider necessary and appropriate to designate in the NTFA the 2300-2335 MHz sub-band</i>
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in the 2300 MHz band for terrestrial systems capable of providing electronic communications services (MFCN), in view of allocating the frequencies in this sub-band for the provision of public networks and of broadband wireless electronic communications and services?

Please substantiate your answer.

Question no. 2

If your answer to the previous question was affirmative, for what business models and, respectively, for what technologies do you deem the band under discussion is appropriate?

Question no. 3

Making abstraction of your interest in the use of the 2300 MHz band, how do you appreciate the attractiveness (technical, commercial) of this band? With which of the bands already allocated or to be allocated for the provision of public networks and electronic communications services do you think the 2300 MHz is potentially substitutable? And complementary?

Please substantiate your answer, keeping in mind the bands harmonised at European level for the terrestrial systems capable of providing wireless electronic communications services.

Question no. 4:

What opportunities/challenges do you foresee in the extension of the future use of the 2300 MHz band for MFCN?

Question no. 5

When do you believe would be appropriate to launch the use of the 2300-2335 MHz sub-band for the provision of broadband electronic communications services in Romania? Do you think that the radio ecosystem for the use of the 2300 MHz band is currently sufficiently mature to allow for a competitive use with that of the other frequency bands intended for the provision of electronic communications public networks and services?

Please substantiate your answer.

Question no. 6

If your answer to Question no. 1 is affirmative, do you consider appropriate to hold, in the near future, a selection procedure for awarding usage rights for the frequencies available in the 2300-2335 MHz sub-band? If your answer is yes, when do you think it would be suitable to hold such a selection procedure?

Please substantiate your answer.

Question no. 7

If your answer to Question no. 6 is affirmative, would you participate in a selection procedure organised in 2021, for awarding usage rights in the 2300-2335 MHz sub-band?

Question no. 8

If your answer to Question no. 6 is negative, when do you think the selection procedure for awarding usage rights in the 2300 MHz band should be organised?

Please substantiate your answer.

2) Limitation of the number of usage rights/licences in the 2300-2335 MHz sub-band; Area of provision of network/networks for which the licences will be granted

According to art. 25 of the Government Emergency Ordinance no. 111/2011 on electronic communications, approved, with amendments and completions, by Law no. 140/2012, with the subsequent amendments and completions, ANCOM may decide to limit the number of licences to be awarded in a frequency band, when it is necessary to ensure the efficient use of radio frequencies or to avoid the occurrence of harmful interferences. The mentioned measure may be adopted with the observance of three conditions: the taking into consideration by ANCOM of the need that the measure brings maximum of benefits to the users and encourages competition; the granting to all interested parties, including users and consumers, of the possibility to express their opinions concerning this measure; the publication of any decision that limits the number of licences, together with the motivation for this measure.

Question no. 9

Do you think that the spectrum available in the 2300 MHz band, respectively 35 MHz for TDD use, is sufficient for the efficient implementation of MFCN at national level and for supporting a viable business model? What about for the implementation of MFCN at local/regional level?

Please substantiate your answer.

Question no. 10

Which of the following options do you find suitable as regards both the radio spectrum efficient use and the need of spectrum resources for the provision of public networks and broadband electronic communications services in the 2300-2335 MHz sub-band:

- a) One licence for a national broadband mobile communications network;*
- b) More licences at national level for broadband mobile/fixed communications networks;*
- c) More licences for local/regional broadband mobile/fixed communications networks.*

Please substantiate your choice.

Question no. 11

What licensing regime do you believe is suitable for the use of the spectrum available in the 2300 MHz band:

- a) awarding of individual exclusive usage rights;*
- b) licensed shared access (LSA);*
- c) other.*

Please substantiate your choice, correlating your answer with your option expressed in Question no. 10.

Question no. 12

Which do you believe is the minimum necessary spectrum amount that a new entrant should hold in the 2300 MHz band to be able to efficiently provide quality (at speeds specific to 4G) broadband electronic communications public networks and services?

Please substantiate your answer, by also taking into consideration the hypothesis of providing electronic communications networks and services both at national and local/regional level.

Question no. 13

Do you believe that, in order to ensure the premises for a fair competition and access to the spectrum resources intended for the provision of broadband mobile/fixed communications networks and services, in the situation of awarding new usage rights in the 2300-2335 MHz sub-band, it is necessary to impose a limit on the maximum amount of spectrum over which an operator can hold rights in the bands above 1 GHz (including the frequency allocations for which the operators already hold usage rights) ?

Please substantiate your answer.

Question no. 14

If your answer to Question no. 13 is affirmative, please specify which would be, in your opinion, the maximum amount of spectrum that an operator should hold in the bands above 1 GHz (FDD/TDD), in correlation with the minimum spectrum amount in the bands above 1 GHz under which the efficient use of the frequencies is no longer possible for the provision of broadband electronic communications services at performances specific to 4G?

Please substantiate your answer.

Question no. 15

If you are interested in obtaining usage rights in the 2300-2335 MHz sub-band, what minimum amount of spectrum do you intend to purchase? And maximum spectrum amount?

Question no. 16

How do you believe should the spectrum in the 2300-2335 MHz sub-band be organised (number and width of the spectrum blocks) if awarded through a competitive selection procedure? And if awarded by comparative selection procedure?

3) Validity of the radio frequency usage rights

Question no. 17

Should a selection procedure for awarding usage rights in the 2300-2335 MHz sub-band be held, which should be, in your opinion, the date of entry into force of the usage rights to be granted in

this sub-band?

Please substantiate your answer.

Question no. 18

Should a selection procedure for awarding usage rights in the 2300-2335 MHz sub-band be held, which should be, in your opinion, the validity period for the granted rights?

Please substantiate your answer.

4) Coverage obligations associated to licences in the 2300-2335 MHz sub-band

The inclusion of coverage obligations in the awarded licences is a consacrated practice, for the purpose of promoting legitimate public interests.

In the selection procedures previously held by ANCOM, requirements have been formulated, and in the awarded licences minimum obligations on service coverage and access to networks have been included.

In the Terms of Reference concerning the competitive selection procedure in view of awarding usage rights in the 800 MHz, 900 MHz, 1800 MHz and 2600 MHz bands, which took place in 2012, distinct coverage obligations were imposed for the licences awarded in the frequency bands below 1 GHz and, respectively, in the bands above 1 GHz, valid from 06.04.2014 through 05.04.2029.

(See Section 3.3.1 of the Terms of Reference, a document which is available for consultation here: http://www.ancom.org.ro/uploads/links_files/Caiet_de_sarcini_procedura_multibanda_800_900_1800_2600_02_07_2012.pdf).

As well, the draft Terms of Reference concerning the competitive selection procedure in view of awarding usage rights in the 700 MHz, 800 MHz, 1500 MHz, 2600 MHz and 3400-3800 MHz bands proposes coverage obligations corresponding to the usage rights to be granted in the bands that will be auctioned off.

Question no. 19

What minimum coverage obligations do you think should be associated to the usage rights of a new entrant that would obtain spectrum in the 2300-2335 MHz sub-band?

Please substantiate your answer, correlating it with the answer you provided to Question no. 12 concerning the minimum spectrum requirements for a new entrant.

Question no. 20

Should usage rights in the 2300-2335 MHz sub-band be granted to existing operators, what additional coverage obligations do you believe should be imposed in addition to those set by the licences already granted in other bands, taking also into account the obligations proposed to be associated the the usage rights in the bands to be auctioned off next year?

Please substantiate your answer.

Question no. 21

Do you consider that the use of the spectrum in the 2300-2335 MHz sub-band is suitable for improving or extending the coverage with broadband electronic communications services of the areas that are not properly covered or that are not covered at all by communications services?

Please substantiate your answer.

Question no. 22

Do you consider appropriate the inclusion in the licences awarded for the use of frequencies in the 2300-2335 MHz sub-band of certain obligations of priority coverage of rural/suburban areas that do not benefit from proper coverage with broadband mobile/fixed communications services that would allow high speed internet access?

Please substantiate your answer.

5) Procedure of awarding the usage rights

As for the licences whose number was limited under the terms of art. 25 of the Framework-Ordinance, ANCOM grants the usage rights through a procedure that must observe a series of conditions, set out by art. 26 paragraph (2) of the Framework-Ordinance. Thus:

- a) the selection procedure must be either competitive or comparative;
- b) the procedure must be objective, transparent, non-discriminatory and proportionate;
- c) the procedure must not effect in restricting, hindering or distorting competition;
- d) the usage rights must be granted, as a rule, within 8 months from the reception of a request therefor; this term may be changed if this is required to observe an international agreement concerning the use of the spectrum or of the orbital position to which Romania is a party.

Question no. 23

Depending on the options you expressed at the questions under Section V.2 relating to the limitation of the number of usage rights that could be granted in the 2300-2335 MHz sub-band, which do you believe would be the most appropriate procedure for awarding the usage rights:

- a) a competitive selection procedure, as defined in paragraph (3¹) of art. 28 of the Framework-Ordinance;
- b) a comparative selection procedure, as defined in paragraph (3) of art. 28 of the Framework-Ordinance;
- c) a direct awarding procedure (after undergoing a simplified selection procedure), if the demand of spectrum does not exceed the amount of spectrum available in the area of provision of the wireless network.

Please substantiate your answer.

Question no. 24

If the option you expressed at the previous question was competitive selection procedure, do you believe that the usage rights in the 2300-2335 MHz sub-band should be awarded through the same awarding procedure with the one for awarding usage rights in other complementary/substitutable bands to the band in question or through a distinct procedure?

Please substantiate your answer.

6) Licence fee

Question no. 25

With which of the harmonised bands above 1 GHz (1800 MHz, 2100 MHz, 2600 MHz FDD, 2600 MHz TDD, 3400-3800 MHz) do you appreciate that the 2300 MHz band should have a sensitively close economic value, in relation to a similar bandwidth?

Please substantiate your answer, taking into consideration the propagation characteristics of various frequency bands, the means and the technical conditions for their use, the spectrum amount available and the equipment existing in the analysed frequency bands, other aspects that can concur to the technical and commercial attractiveness of the bands.

The answers to the questions above must be seen in a corroborated manner. As well, the respondents can substantiate the position expressed in the questionnaire.

The substantiated answers can be submitted by mail, directly to the ANCOM Registry Office, by means of the online service [Registratura online](#) or by email to consultare@ancom.ro until 20 November 2020.

RESPONDENT'S IDENTIFICATION DATA

Company:

Field of activity:

Contact person:

Name First name

Position

E-mail Telephone