

The logo for ANCOM, consisting of the word "ANCOM" in a bold, grey, sans-serif font. To the right of the text is a red curved line that starts at the top and curves downwards. On the left side of the slide, there is a large red vertical bar with a white curved line that follows its inner edge.

National Authority for Management and
Regulation in Communications of Romania

**ANCOM perspective
on the radio spectrum strategy
for the development of
Broadband Wireless Access (BWA) services
in Romania**

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Goal

- The establishment of the principles, conditions and the procedure for granting the spectrum rights of use, in the frequency bands 2500 – 2690 MHz and 790 – 862 MHz, in order to implement broadband mobile communications systems, in connection with the future use of the other bands designated for these services: the 900 MHz, 1800 MHz and the 2100 MHz bands.

Strategical objectives

1. Increasing the penetration of broadband communications services and stimulating the competition on the mobile communications services market
2. Encouraging the efficient investments in the national infrastructure and promoting innovation
3. Complying with the principles of objectivity, transparency, non-discrimination and technological neutrality, when granting the spectrum rights of use
4. Allotting the radio spectrum resource in an efficient manner, to those operators which value it most
5. Providing regulatory predictability and certainty for the market

Strategical objectives

6. Integrating the specific national requirements imposed by the current Romanian context
7. Using the radio spectrum in an efficient way, taking into account the technological evolution and the requirements of the Romanian mobile communications market
8. Creating an optimal correlation with the frequency bands already licenced for this type of services

Regulatory framework

- EU: Common European regulatory framework
 - Authorisation directive (**2002/20/EC** ammended by **2009/140/EC**)
 - Framework directive (**2002/21/EC** ammended by **2009/140/EC**)
 - GSM directive (**1987/372/EEC** ammended by **2009/114/EC**)
 - Radio spectrum decision (**676/2002/EC**)
 - EC decision no. **2008/477/EC** on the harmonisation of the 2500-2690 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community
 - EC decision no. **2009/766/EC** on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community (recently ammended by the EC)
 - EC decision no. **2010/267/EU** on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union

Regulatory framework

- CEPT/ECC: Harmonised technical conditions on European level
 - Decision no. **ECC/DEC/(05)05** on harmonised utilisation of spectrum for IMT-2000/UMTS systems operating within the band 2500-2690 MHz
 - Decision no. **ECC/DEC/(09)03** on harmonised conditions for Mobile/Fixed Communications Networks (MFCN) operating in the band 790-862 MHz

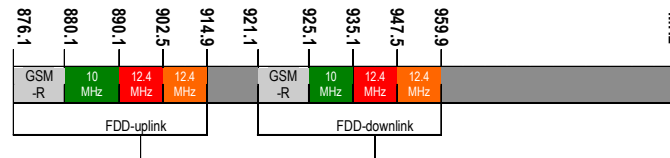
- NTFA (National Table of Frequency Bands Allocations)
 - **2500-2690 MHz:**
 - 2500-2520 MHz – civil use
 - 2520-2655 MHz – shared civil/military use
 - 2655-2690 MHz – civil use
 - **790-862 MHz:**
 - 790-830 MHz – civil use
 - 830-862 MHz – shared civil/military use
 - ANCOM has taken the first steps to make available the whole 2600 MHz and 800 MHz frequency bands for civil use

Current situation of radio spectrum allotments in the 900 MHz, 1800 MHz and 2100 MHz frequency bands

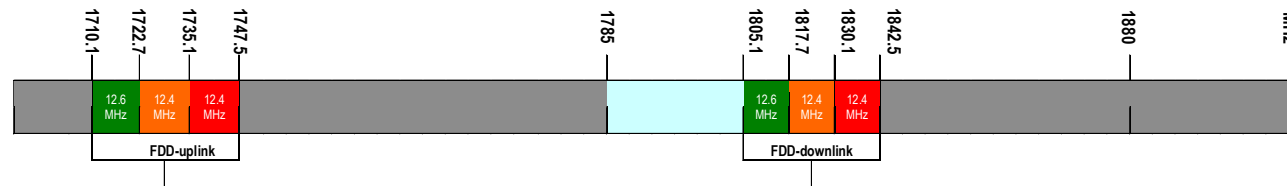
	COSMOTE	VODAFONE	ORANGE	RCS&RDS
900 MHz	2 x 10 MHz Valid through: 05.04.2014	2 x 12,4 MHz Valid through: 31.12.2011	2 x 12,4 MHz Valid through: 31.12.2011	-
1800 MHz	2 x 12,6 MHz Valid through: 05.04.2014	2 x 12,4 MHz Valid through: 31.12.2011	2 x 12,4 MHz Valid through: 31.12.2011	-
2100 MHz	2x15 MHz (FDD) 5 MHz (TDD) Valid through: 19.01.2022	2x15 MHz (FDD) 5 MHz (TDD) Valid through: 31.03.2020	2x15 MHz (FDD) 5 MHz (TDD) Valid through: 31.03.2020	2x15 MHz (FDD) 5 MHz (TDD) Valid through: 05.01.2022

Allotments for the existing operators in the 900 MHz, 1800 MHz and 2100 MHz frequency bands

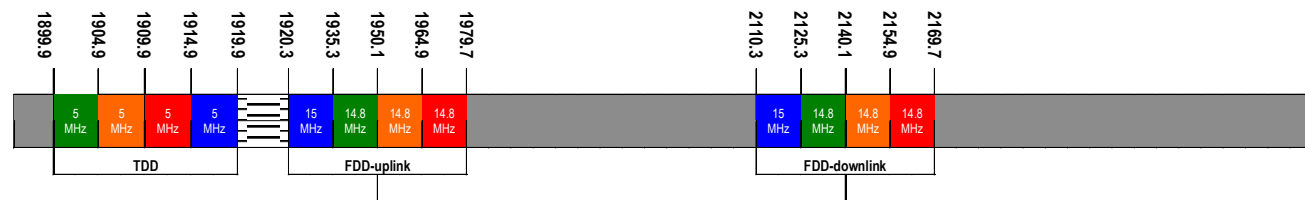
900 MHz frequency band



1800 MHz frequency band



2100 MHz frequency band



■ Cosmote RMT

■ Orange România

■ RCS & RDS

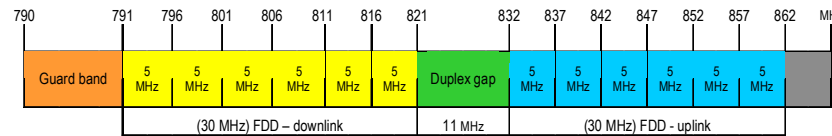
■ Vodafone România

Radio spectrum to be allotted for BWA systems in the 800 MHz and 2600 MHz frequency bands

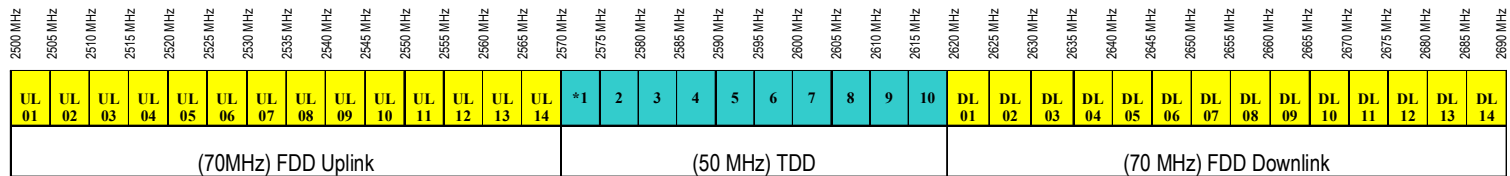
Band	Spectrum to be allotted	Spectrum amount	Number of blocks possible to be allotted
800 MHz	791-821 / 832-862 MHz (FDD)	2 x 30 MHz	6 blocks of 2 x 5 MHz (paired blocks)
2,6 GHz	2500-2570 / 2620-2690 MHz (FDD)	2 x 70 MHz	14 blocks of 2 x 5 MHz (paired blocks)
	2570-2620 MHz (TDD)	50 MHz	10 blocks of 5 MHz (unpaired blocks)

Radio spectrum to be allotted for BWA systems in the 800 MHz and 2600 MHz frequency bands

Harmonised channel arrangement, of 5 MHz width blocks, in the frequency band 790 – 862 MHz



Harmonised channel arrangement, of 5 MHz width blocks, in the frequency band 2500 – 2690 MHz



The usage of the 2500-2690 MHz and 790-862 MHz frequency bands

- The aim of the spectrum rights of use granted in these bands is to provide wireless access for broadband electronic communications services
- The area for the provision of BWA networks and services: national territory
- The spectrum rights of use will be granted on a technologically neutral basis.

Principles for granting the spectrum usage rights

1. Providing the necessary and sufficient spectrum resource and the optimal technical conditions in order to promote competitive broadband electronic communications services
2. Ensuring proper conditions for access to the radio spectrum resource that will lead to its efficient allotment
3. Setting a number of minimal conditions/requirements for using the radio spectrum resource that will ensure its efficient use
4. Ensuring the radio compatibility with other systems using the same frequency band or adjacent frequency bands (DVB-T, PMSE)
5. Providing flexibility in spectrum use

Options concerning the awarding of spectrum usage rights

- **Objective:** ensure the creation of equitable spectrum portfolios for all operators which currently own or will own spectrum usage rights in the frequency bands designated for the provision of broadband electronic communications networks and services

In order to achieve this objective, at least the following two options will be considered:

- A. - to extend until the mid of 2014 the validity of the two oldest 900/1800 MHz bands licences, in order to align them to the expiry date of the third 900/1800 MHz bands licence;
- to organise next year a selection procedure in order to grant spectrum rights of use in the 800 and 2600 MHz frequency bands, simultaneously with the 900 and 1800 MHz frequency bands; these rights of use shall enter into force in 2013 and, respectively, in 2014.

Options concerning the awarding of spectrum usage rights

- B.** - to extend until the end of 2021 the validity of all the 900/1800 MHz bands licences, in order to align them to the expiry date of the two newest 2100 MHz band licences;
- to organise next year a selection procedure in order to grant spectrum rights of use in the 800 and 2600 MHz frequency bands; these rights of use shall enter into force in 2013;
- in this case, ANCOM will elaborate a strategy until 2020, at the latest, regarding the spectrum refarming in all the above mentioned bands.

Requirements and restrictions concerning the awarding of spectrum usage rights

The available amount of spectrum for the selection procedure will be as follows:

- Above 1 GHz:

14 blocks of **2 x 5 MHz** in the 2600 MHz band;

10 blocks of **5 MHz** in the 2600 MHz band;

8 blocks of **2 x 5 MHz** in the 1800 MHz band (only for scenario A);

CONCLUSIONS:

- Big amount of spectrum;

- Low risk of anti-competitive spectrum accumulation

- Below 1 GHz:

6 blocks of **2 x 5 MHz** in the 800 MHz band;

7 blocks of **2 x 5 MHz** in the 900 MHz band (only for scenario A);

CONCLUSIONS:

- High risk of anti-competitive results

Requirements and restrictions concerning the awarding of spectrum usage rights

➤ In order to prevent anti-competitive results, a **restriction** is required to be imposed with regard to the maximum amount of spectrum (spectrum cap) that may be detained by an operator in bands below 1 GHz.

➤ **Which is the optimum limit?**

A limit of **maximum 2 x 20 MHz (paired)** for the scenario A, **below 1 GHz**.

A limit of **maximum 2 x 22,5 MHz (paired)** for the scenario B, **below 1 GHz**; the currently allotted spectrum in the 900 MHz band is taken into account when applying the restriction to the operators that own spectrum usage rights in the 900 MHz band.

Requirements and restrictions concerning the awarding of spectrum usage rights

- The limitation of the spectrum amount that may be acquired by auction in the 800 MHz band (giving due account to the existing spectrum allotments for the GSM operators in the 900 MHz band), or in the 800 and 900 MHz bands in the other scenario, shall ensure the conditions for:
 - ✓ an equitable access to the spectrum resource below 1 GHz, which is more adequate for covering rural areas, thus implying lower costs for developing the infrastructure;
 - ✓ a fair competition;
 - ✓ stimulating efficient investment in the infrastructure;
 - ✓ allowing the access to spectrum in the 800 MHz band, or in both 800 and 900 MHz bands, for new operators on the national market;

Requirements and restrictions concerning the awarding of spectrum usage rights

- If a spectrum cap of **maximum 2 x 22,5 MHz** is imposed for the spectrum that may be allotted in the band 790-862 MHz, in addition to the spectrum already allotted in the 900 MHz band for the case of the GSM operators, the situation for the potential bidders in the 800 MHz band will be as follows:

Potential bidders	Maximum number of blocks possible to be bid by each operator in the 800 MHz band	Maximum amount of spectrum possible to be bid by each operator in the 800 MHz band
VODAFONE	2 blocks of 2 x 5 MHz	2 x 10 MHz
ORANGE	2 blocks of 2 x 5 MHz	2 x 10 MHz
COSMOTE	2 blocks of 2 x 5 MHz	2 x 10 MHz
RCS&RDS	4 blocks of 2 x 5 MHz	2 x 20 MHz
New operators	4 blocks of 2 x 5 MHz	2 x 20 MHz

Requirements and restrictions concerning the awarding of spectrum usage rights

➤ Minimum individual spectrum requirements:

The participants in the auction may define, within their official request to take part in the selection procedure, the minimum individual spectrum requirements that they deem necessary for developing their chosen business model (**minimum essential spectrum package**).

The minimum essential spectrum package may be defined:

- for the band(s) below 1 GHz only, or
 - for all bands opened for the auction, without specifying the spectrum requirements for each band, or
 - cumulated for all bands opened for the auction, with particular specification for the band(s) below 1 GHz
- The participants in the auction which initially required a minimum essential spectrum package but are bidding for less than this spectrum amount during the auction are eliminated from the selection procedure.
 - The participants in the auction which finally gain a smaller amount of spectrum than the initial minimum essential spectrum package are not granted any spectrum usage rights.

Conditions concerning the use of spectrum

- In order to fulfill the objectives of increasing the penetration of broadband communications services, of stimulating the competition on the mobile communications services market and of ensuring an efficient and interference-free use of the allotted spectrum, **a set of minimal conditions has to be imposed for the use of radio spectrum** including:
 - the coverage levels with services,
 - the deadlines for achieving these levels,
 - the technical conditions for the co-existence with other applications allowed in the same band or in the adjacent bands.
 - For the bands below 1 GHz, coverage obligations shall be imposed for the areas not covered up to now and which are not economically attractive.

Conditions concerning the use of spectrum

- Technical conditions for the use of radio spectrum will be set with the aim of preventing harmful interference and ensuring the co-existence with other systems and applications in the same frequency band (cross-border coordination with DVB-T allotments of neighbouring countries, PMSE in the 800 MHz band) or in the adjacent frequency bands:
 - ✓ These will be established on the basis of the relevant EC decisions and CEPT/ECC recommendations, decisions and reports, concerning the harmonised technical conditions for the use of the bands 790-862 MHz și 2500-2690 MHz and the compatibility with other systems.
- The minimal conditions are set out by ANCOM before the beginning of the auction and the participants shall commit themselves to fulfill them.

The procedure for awarding the spectrum usage rights

- Competitive or comparative selection procedure ?
 - **Competitive selection (auction)** – procedure by which the spectrum usage rights are awarded to the winner of an auction, due to the bidding of a maximum value for the auctioned spectrum, having as a start point a minimal pre-set value, while ensuring the fulfillment of some pre-qualification criteria of a technical, administrative or financial nature, as the case may be.
 - **Comparative selection (beauty contest)** – procedure by which the spectrum usage rights are awarded to the first ranked, after an assessment of the tenders presented by the participants, based on a set a pre-established criteria of a technical, administrative or financial nature, as the case may be.

The procedure for awarding the spectrum usage rights

➤ Competitive selection (auction)

• Advantages:

- ✓ Its outcome consists in more efficient results compared to other mechanisms of granting spectrum rights of use
- ✓ If there is sufficient competition, it ensures that an optimal value for the radio spectrum is obtained; this method is more likely to lead to an allotment of the radio spectrum resource to those operators which value it most
- ✓ It allows flexibility in the allotment of radio spectrum based on the options of the bidders
- ✓ A properly organised auction ensures the premises of an objective and fair selection process which fulfills the requirements of non-discrimination, openness and transparency
- ✓ It is potentially transparent and there are less arguments to challenge it in court
- ✓ It can be conducted in a quick and efficient manner

CONCLUSIONS

- 1) ANCOM will elaborate and approve this year a strategy document regarding the development of BWA services in Romania.
- 2) ANCOM will organise in 2012 a selection procedure in order to award spectrum usage rights in accordance with the above mentioned strategy.
- 3) By implementing these measures, ANCOM is hopeful that Romania will have one of the most competitive and developed mobile broadband markets of this region.



Thank you for your attention !

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