



Република Србија

RATEL

Републичка агенција
за телекомуникације

Development of Mobile Broadband Access in Frequency Bands below 1GHz in Serbia – Regulatory Problems –

Milenko Ostojić, RATEL

milenko.ostojic@ratel.rs

Introduction

- ▶ BROADBAND is related to always-on, high speed Internet access which enables access to a wide variety of contents and services.
- ▶ Mobile broadband access is enabled by radio or wireless connection and represents the ability of changing the location of connection from which communication is performed.

Importance

- ▶ Nowadays, the importance of broadband access is enormous, and its development is encouraged in order to enhance economic growth and competitiveness and help overcome the current world economic crisis. Building this modern infrastructure can be equaled in importance with the building of railways in the nineteenth century (José Manuel Barroso, EC).
- ▶ EC plans to reach 100% broadband access penetration in EU countries between 2010 and 2013.

Strategy of Broadband Access Development in the Republic of Serbia until Year 2012



- ▶ “The goal of the Strategy is to define the conditions which will enable reaching the broadband access penetration of 20%, or 1,200,000 users, by year 2012.”

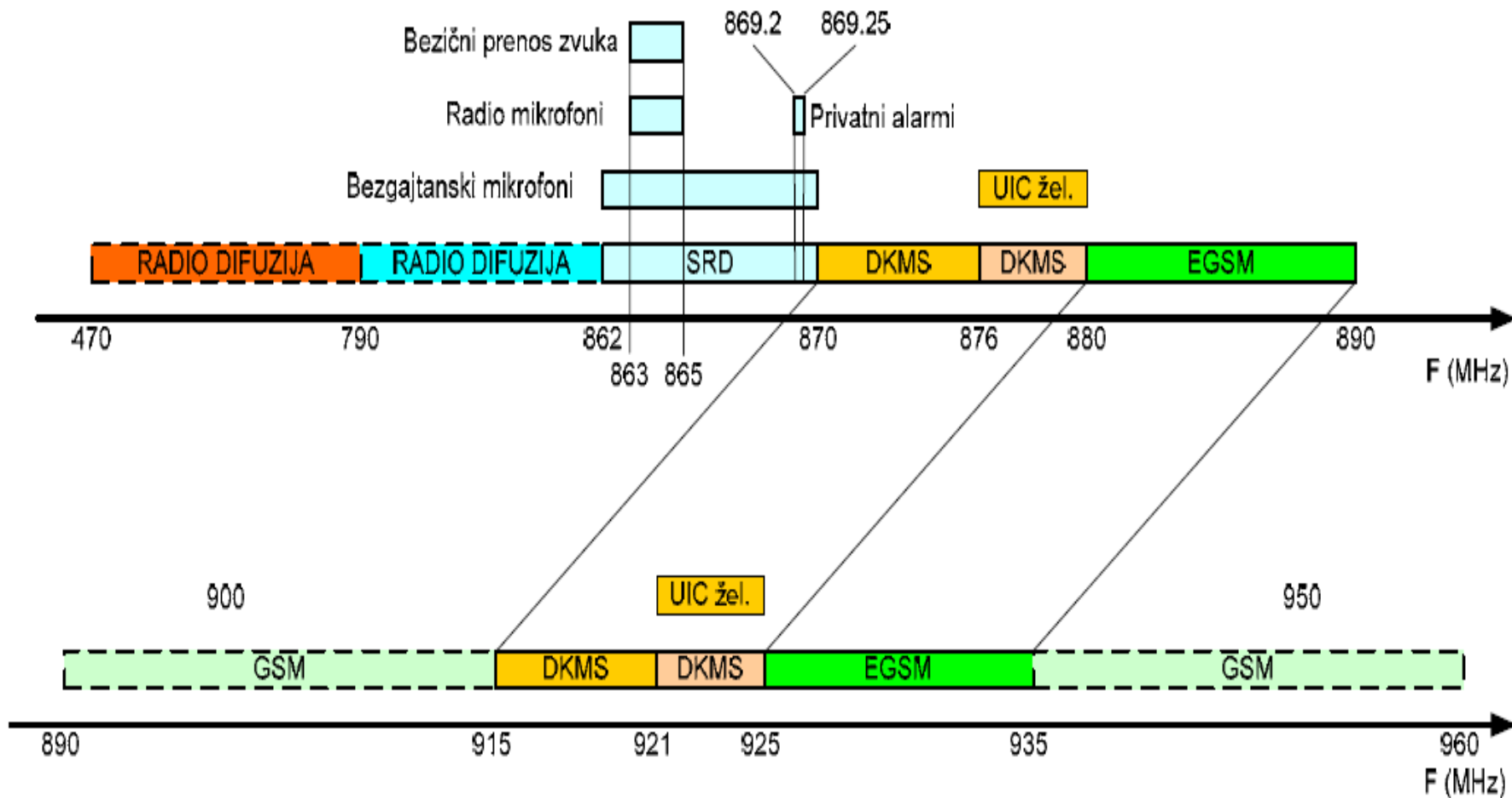
The Importance of the Mobile (Wireless) Broadband Access

- ▶ It is obvious that the set deadlines for reaching the targeted broadband access penetration cannot be fulfilled without significant mobile broadband access development.
- ▶ Promising technologies are:
 - ❖ WiMAX
 - ❖ LTE (Long Term Evolution)

Basic Characteristics of Frequency Bands below 1 GHz

- ▶ Frequency bands below 1 GHz are becoming very interesting for deployment, as they enable much lower prices and, consequently, faster realization of signal coverage. A much smaller number of base stations is necessary, compared to the bands above 1 GHz.
- ▶ A very important advantage over higher spectrum bands is better indoor signal reception, since signals below 1 GHz penetrate barriers, such as walls, more efficiently.

Assignment of the Existing Frequency Bands in the Republic of Serbia, According to the Allocation Plan



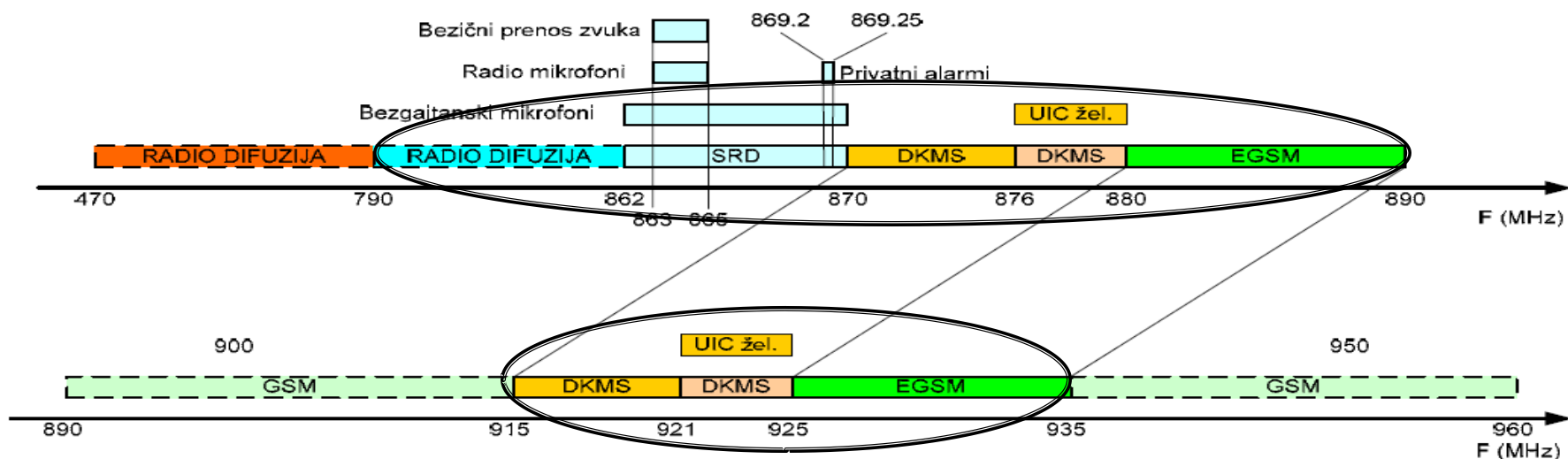
The complete frequency allocation plan can be divided into the following bands:

- **GSM band** - 890-915 MHz paired with 935-960 MHz.
- **EGSM c**– 880-890 MHz paired with 925-935 MHz.
- **DLMS-1 band** (digital land mobile systems) –
876-880 MHz paired with 921-925 MHz.
- **DLMS-2 band**(digital land mobile systems) –
870-876 MHz paired with 915-921 MHz.
- **SRD band** – 862-970 MHz.
- **Broadcasting band**– 790-862 MHz digital dividend

Each band will be further analyzed in the following slides.

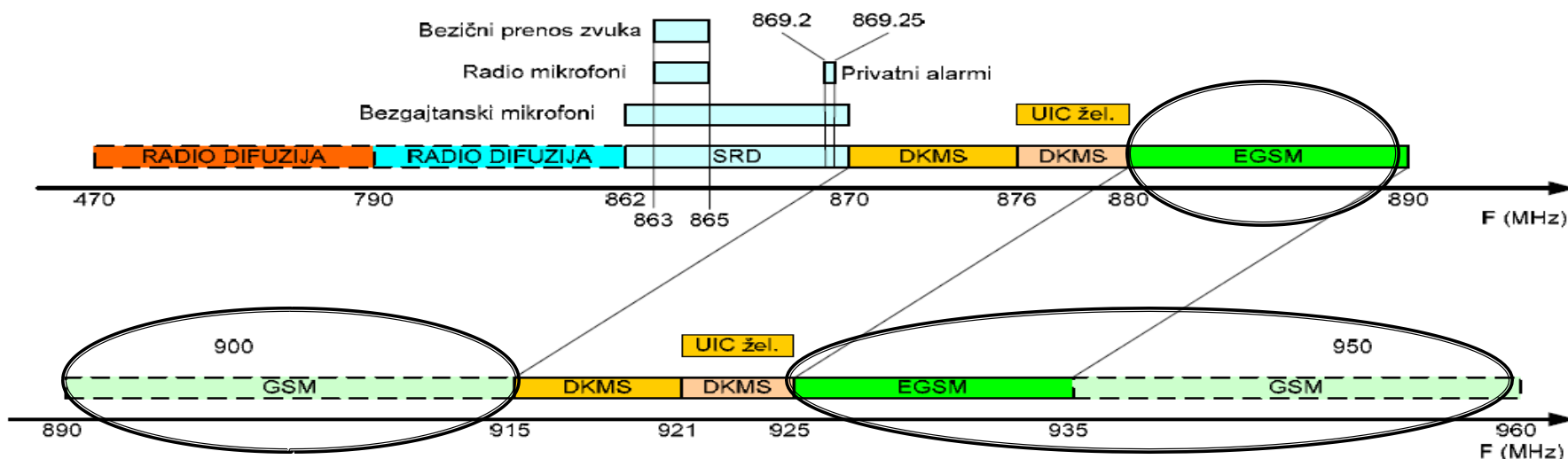
790–890 MHz and 915–935 MHz Frequency Bands

- These frequency bands are used by some state institutions, on the primary basis.
- According to the adopted plan, migration to the newly assigned bands will be completed during the year 2010.
- The possibility of further development and mass implementation of mobile broadband access in Serbia will highly depend on the actual dynamics of releasing the bands.



- GSM band– 890–915 paired with 935–960 MHz
- EGSM band– 880–890 paired with 925–935 MHz

- According to the modification of the EU GSM Directive, GSM band and EGSM band are joined under the term 900 MHz band.
- The Directive also allows the use of UMTS technology in this band, provided the necessary compatibility measures are respected.
- Redistribution will be executed in a transparent manner, in order to prevent market disturbances.



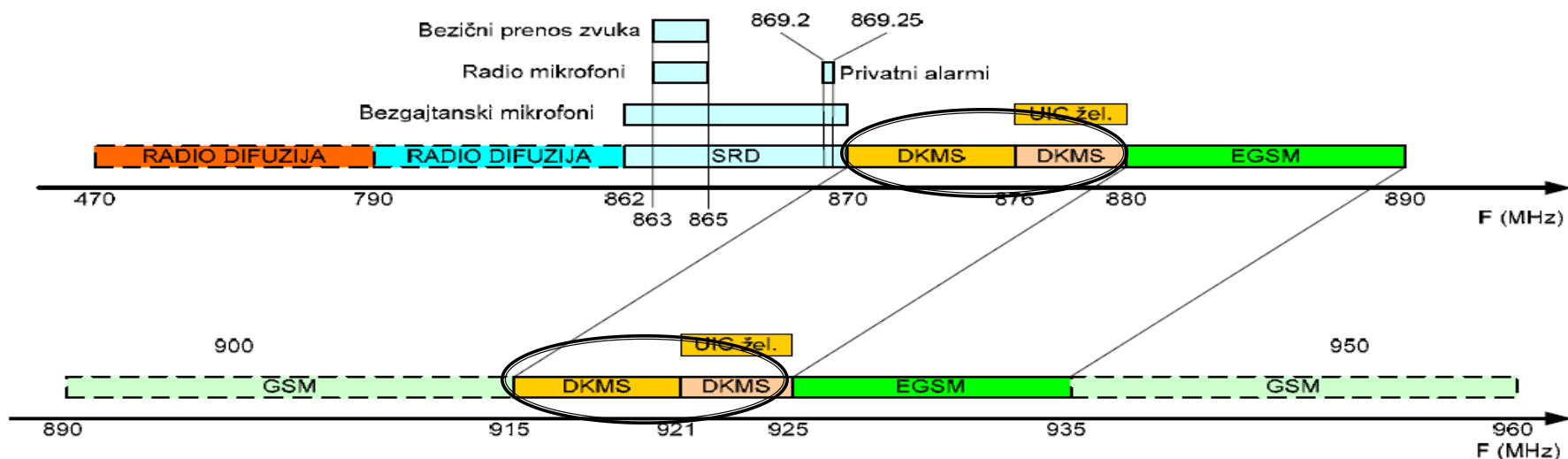
Serbia Case

- ▶ Three operators use this band:
 - Telekom Srbija, MTS (2 x 9 MHz)
 - Telenor (2 x 9 MHz)
 - Vip Mobile (2 x 4.5 MHz)
- ▶ The fact that one operator has been assigned less spectrum in this band results in unequal market conditions and creates a regulatory problem.
- ▶ After freeing a portion of the EGSM band, it will be possible to change the licence conditions for all three operators and establish equal conditions for all operators.
- ▶ In that respect it will be necessary to modify the Allotment and Allocation plans.

Digital Land Mobile Systems Band

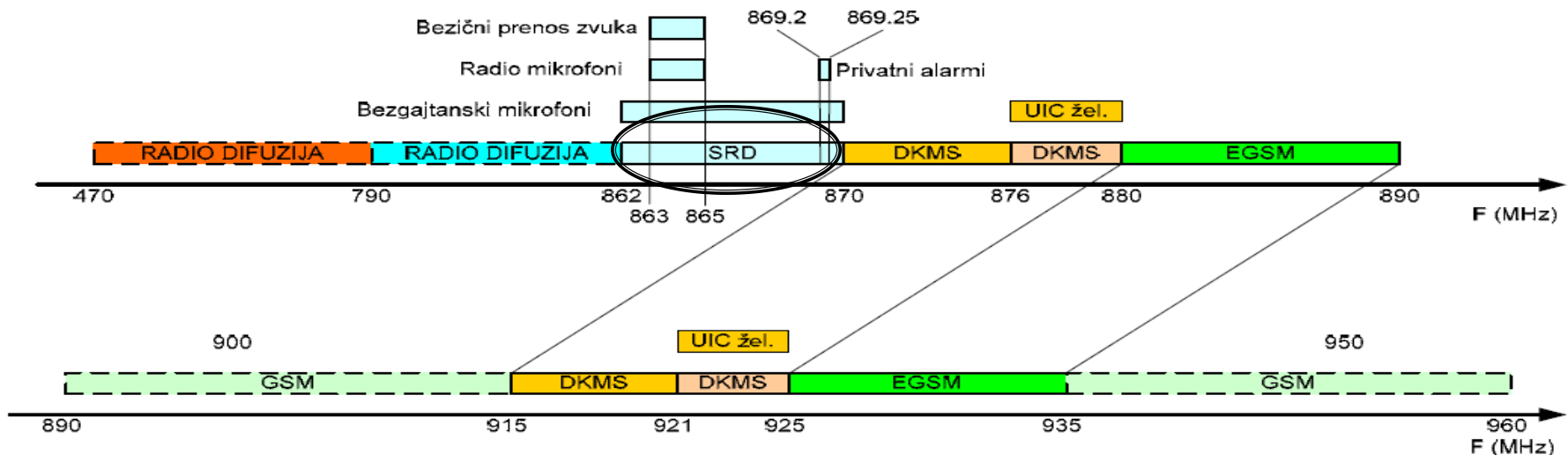
DLMS-1 and DLMS-2

- These bands are used for directional radio links. They are assigned to some government authorities and to Serbian Railways.
- Since there are no allotments in this band in RATEL's database, it should be checked whether the Serbian Railways use a part of this band.



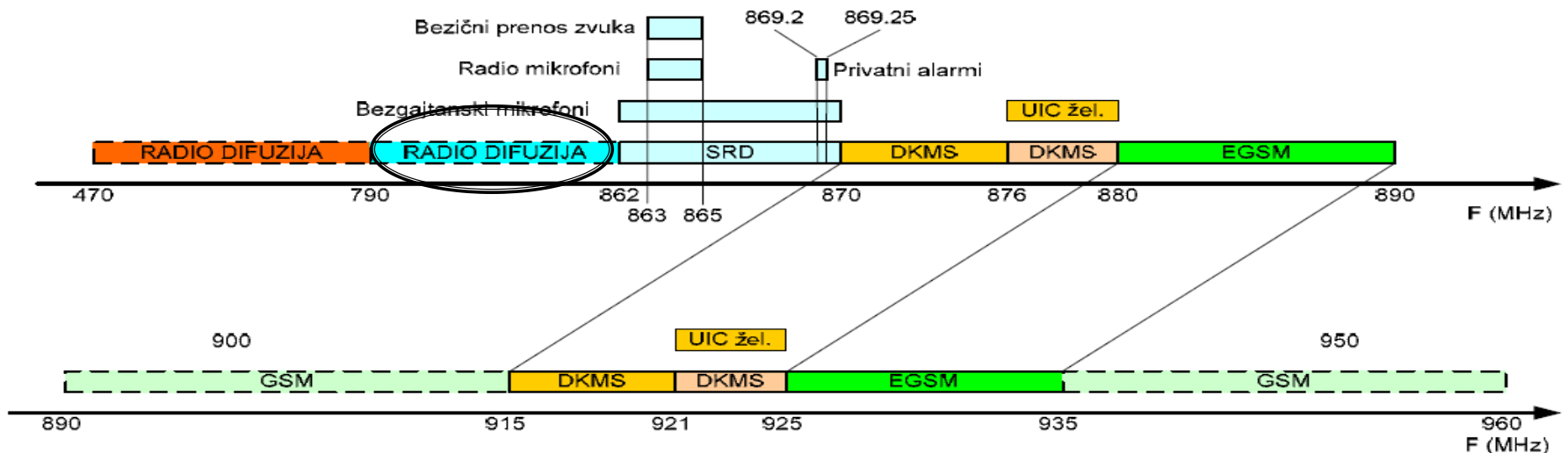
SRD band (Short range devices)

- This band is intended for short range communications, and the conditions are defined by RATEL's bylaw.
- The devices used for this purpose are: cordless microphones, radio microphones, hearing aids, private alarms and other telemetric devices.
- The precise number of users is not easily determined.
- According to RATEL's database, only a few consignments of radio microphones have been imported in the last 4 years, which implies low usage of the band.



Broadcasting Band– Potential Digital Dividend Band

- Potential band users:
 - TV distributors, for HDTV and other purposes,
 - Telecommunication operators, for mobile broadband access,
 - Alternative operators, for mobile broadband access,
 - Other potential users, public enterprise telecommunication networks....,
 - Special events...



Broadcasting Band– Potential Digital Dividend Band

- ▶ Radio Spectrum Policy Group, within the European Commission, has created a document, *Opinion on the Digital Dividend*, which assigns the 174–230 MHz and 470–790 MHz frequency bands primarily to the digital broadcasting of TV programs, while the 790–862 MHz band can be used for other purposes, like mobile broadband access. It is necessary to assume a coordinated approach to this problem, in order to ensure system compatibility within the EU.
- ▶ A certain number of EU countries has already made decisions in this direction: Finland, France, Sweden, United Kingdom, Czech Republic and Spain.
The preparations are underway in: Germany, Denmark, Hungary, Ireland, Luxembourg, Latvia, Netherlands and Slovakia.

Strategy for Switchover from Analogue to Digital Broadcasting of Radio and Television Programs in the Republic of Serbia

- ▶ 4 April 2012 has been set as the analog switch-off date in the Republic of Serbia.
- ▶ According to the Strategy, the digital dividend will be used in a manner which will enhance economic growth and open the possibility of its implementation in mobile broadband access.
- ▶ The Strategy states that the Republic of Serbia is expected to make necessary decisions between 2012 and 2015.

Elements of the Coordinated Approach to Allotments in the 800 MHz Band within the SEE Region

- ▶ Basic problems are derived from the fact that we are dealing with two different spectrum systems:
 - Broadcasting distribution has fewer emitters (3–7) per allotment, with high emitted power.
 - Mobile broadband access is characterized by a large number of low power base stations per allotment (over 100).
- ▶ These facts require strict allotment coordination between the countries within regions, especially regarding:
 - Protection of analogue TV,
 - Protection of digital TV,
 - Protection of mobile broadband stations,
 - Protection of broadband base stations.

Technical aspects of the coordination are defined by relevant CEPT recommendations

- ▶ CEPT Report 29, gives guidance on cross-border coordination issues
- ▶ CEPT Report 30, identifies least restrictive technical conditions
- ▶ CEPT Report 31, identifies preferred frequency arrangements for 800 MHz band
- ▶ CEPT Report 32, Program Making and Special Events (PMSE) elements
- ▶ ECC Recommendation (08)02 for Freq. Planning and Coordination for GSM 900 MHz (including E-GSM) /UMTS 900 MHz...Land Mobile Systems

SEE Digi.TV Program

- ▶ In order to achieve better coordination in the implementation and realization of maximum opportunities provided by the digital dividend in the SEE countries, APEK has proposed a project:

South–East European Digital TeleVision



The last information from International Law Office

- ▶ **Largest Frequency Auction Attracts Few Bidders,**
- ▶ On January 21 2010 the application proceeding for what is considered to be the largest frequency auction in Germany closed. A total of 360 megahertz (MHz) in four different frequency bands (800 MHz, 1 800 MHz, 2 gigahertz (GHz) and 2.6 GHz) is available. However, according to a press release issued by the Federal Network Agency, only six companies applied to take part in the auction: T-Mobile, Vodafone, E-Plus and Telefónica O2. The identity of the other two applicants is unknown and therefore subject to speculation on the market.

Conclusion

- ▶ After a portion of the band is released, the 170 MHz band will be available for new allotments and redistribution of the existing ones.
- ▶ Measures for limiting the import of equipment operating in this band should be undertaken on time.
- ▶ The whole band should be treated as single during the planning and assignment process.
- ▶ The Allocation plan is to be corrected in order to be adjusted to the international documents and national interests.
- ▶ The Allotment plan should be realized on the basis of technology and service neutrality, so that all potential users are put in the same position (WiMAX, LTE, DTV).

Conclusion

- There are other regulatory issues to be solved, primarily those related to the assignment means and procedures.
- All 170 MHz of free frequency space should be regarded as single space within the Allotment plan.
- The implementation of the Plan can solve some of the broadband access problems. However, congestion can be expected soon after it, so other important frequency bands should not be neglected, for example 1.8, 2.5, 3.4, 3.6 and 5.5 GHz.
- This implementation also contributes to the convergence of fixed and mobile networks and services, within the scope of building NGNs, which remain the top priority in all countries.