

## CONTENTS

### III. MANAGEMENT OF THE RADIO-FREQUENCY SPECTRUM

1. PRINCIPLES FOR MANAGEMENT AND ALLOCATION OF THE RADIO FREQUENCY SPECTRUM FOR CIVIL NEEDS
2. PROVISION OF RADIO FREQUENCY RESOURCES
3. EFFICIENT UTILIZATION OF THE RADIO FREQUENCY SPECTRUM
4. PLANNING AND USE OF THE RADIO FREQUENCY SPECTRUM
5. ELECTROMAGNETIC COMPATIBILITY (EMC)

### III. MANAGEMENT OF THE RADIO-FREQUENCY SPECTRUM

During the last several years we have witnessed an extremely impetuous progress in the area of telecommunications worldwide and especially in the field of telecommunication technologies using radio frequency spectrum. While spreading out the radio waves meet no borders there are almost no places on the Planet where you cannot communicate with any other part of the globe. In other words, all countries, no matter whether they like it or not, take part in the process of global development and application of new technologies (mobile cellular systems, satellite systems, digital radio and television, etc.).

Bulgaria participates actively in the above mentioned process. In the area of the development of communications and information technologies, the Government's Program for 2001-2005 includes the following strategic goal – to satisfy the business and civil requirements to a wide range of modern, efficient and of high quality information and telecommunications services by complying with the principles for non-discrimination and transparency, and according to the requirements for the accession of the Republic of Bulgaria to EU and UN.

As an independent body CRC shall conform to the government policy on the planning and allocation of radio frequency spectrum for civil needs as well as to the sectoral telecommunications policy of the Republic of Bulgaria. The radio frequency spectrum is a national treasure and has to be used efficiently and on an equal basis because any losses from its incorrect planning now will not be covered in the future. The efficient use of the spectrum depends directly on the correctly defined principles for its use and allocation according to the needs of its users.

#### 1. PRINCIPLES FOR MANAGEMENT AND ALLOCATION OF THE RADIO FREQUENCY SPECTRUM FOR CIVIL NEEDS

After conducting a public discussion CRC adopted new principles for management and allocation of the radio frequency spectrum for civil needs. These principles include the main rules and targets based on which CRC performs its activities as specialized independent control body responsible for the civil radio frequency spectrum.

#### 2. PROVISION OF RADIO FREQUENCY RESOURCES

With regard to the above mentioned trend for globalization, the National plan for allocation of the radio frequency spectrum as radio frequencies and radio frequency bands for civil needs, for the national defense and security needs as well as for shared use among Operators (National Frequency Plan), is to be harmonized with the one of the CEPT Member-Countries, the UN and ITU Radio Regulations.

The National Frequency Plan was updated according to Decision No 396/03.06.2003 of the Council of Ministers. The update involved the following changes:

- Four notes were deleted
- Corrections were made to eighteen of the existing notes

CRC representatives participated in the inter-department working-group for the preparation of Bulgaria's position on 31 of the total 39 paragraphs in the agenda of the World Radio Conference (WRC-03) June/July 2003. CRC was a coordinator on 7 paragraphs. Bulgaria presented two

documents on the conference. The first one deleted Bulgaria's name from some under-line notes in the Table of Frequency Allocations of the Radio Regulations in order to achieve better harmonization of our national allocations with the European frequency allocations. The second document included some measures aiming to overcome the delay of the Bureau of the Radiocommunications Sector of ITU in their work of processing the requests for satellite systems. The document was prepared by the Research Institute for Communications and coordinated with CRC.

Bulgaria supported completely 49 of the total 52 European proposals made on that conference and its position differed in only 3 of the proposals due to the specifics of our national interests. This shows the willingness to achieve the highest possible level of harmonization between our national strategy for the use of radio frequency spectrum and the common European strategy in this area. Usually this means to achieve balance between the provision of the frequency resources necessary for implementation of new radio communications technologies and the reliable protection of the already existing and developed conventional radio communications systems.

According to Decision No 927/31.12.2003 of the Council of Ministers the National Frequency Plan was updated and the ranges from 1GHz to 5 GHz were replanned in order to harmonize them with the decisions adopted on WRC-03 and the European allocation of radio frequency spectrum ERC REPORT 25 – revision 2003 and provision of radio frequency resource for civil needs. The update involved the following changes:

- 25 new notes were written
- Corrections were made to 7 of the existing notes

CRC also made notes and proposals on the project for update of the National Frequency Plan for ranges between 5 GHz and 100 GHz.

#### **The update of the National Frequency Plan ensured:**

- Greater harmonization of the radio frequency allocation with the Radio Regulations and the European Table of Frequency Allocations;
- Release of new frequency bands and update the existing ones for civil needs;
- Specification of the conditions for shared use of one and the same frequency bands by different radio services;
- Separation, reallocation and differentiation frequency bands for new radio services;
- New and updated frequency bands and frequencies for civil needs to be used by short-range radio equipment;
- Correction of the wording of separate notes and adding new notes in order to comply with the notes in the Radio Regulations and the European Table of Frequency Allocations;
- Change of the users of separate frequency bands in order to provide sufficient frequency resource for different radio services.

### **3. EFFICIENT UTILIZATION OF THE RADIO FREQUENCY SPECTRUM**

The Communications Regulation Commission:

- Conducted a public debate on the proposal for determination of the radio frequency spectrum for shared use in the performance of telecommunications activities based on registration under general license;
- Prepared technical parameters and requirements for the realization of telecommunications by using independent and public telecommunications networks with individually provided scarce resource – radio frequency spectrum for civil needs;
- Determined the radio frequency resource for harmonized introduction of new technologies;
- Frequency provision and preparation of the technical characteristics and parameters for introduction of new digital technologies;
- Studied an on-site electromagnetic compatibility and an electromagnetic compatibility between radio services;

- Frequency planning of telecommunications networks making use of the radio frequency spectrum for civil needs according to the methods developed in the recommendations of ITU and CEPT for sharing of the same frequency allocations for different frequency ranges;
- Developed national radio frequency allocations for radio services in accordance with the recommendations of ITU and CEPT;
- Continued the research for implementation of terrestrial digital radio and television allocation.
- With regard to the harmonization, CRC made a detailed review of Bulgaria's access to different decisions of the Electronic Communications Committee (ECC);
- Performed frequency assignment, preliminary coordination and coordination of all government bodies and administrations interested in the provision of radio frequency spectrum for temporary use on the territory of the Republic of Bulgaria;
- CRC performed the national coordination among all administration interested in the radio frequencies and radio frequency bands provided with individual licenses to separate operators. It also performed national coordination among all state bodies and administrations interested in radio frequencies and radio frequency bands for civil needs, provided with individual licenses to public operators in order to guarantee the safety of aviation and navigation as well as the national security protection;
- Continued their work in adjusting the national frequency allocations for telecommunications networks from fixed radio services of the type 'point to point' and 'point to multipoint' at the ranges 3.4-3.6 GHz and 3.6-3.8 GHz.;
- Continued the development of national frequency allocations for the fixed radio service. A perspective planning of range 29 GHz was made.

#### **4. PLANNING AND USE OF THE RADIO FREQUENCY SPECTRUM**

##### **Mobile radio service**

- A specification of the provided radio frequency spectrum, the provision of additional radio frequency spectrum and the reallocation of radio frequency bands at ranges 900 and 1800 MHz for the realization of telecommunications through GSM public mobile networks with national coverage, was made. It was made according to the terms and conditions for allocation of the radio frequency spectrum – equal opportunities and efficient use. The principle of nondiscrimination provides for equal allocation of frequency resource for both ranges – 900 and 1800 MHz – for all functioning operators and the reservation of radio frequency resource for the third GSM operator;
- In 2003, the radio frequency bands 411,00-411,50/421,00-421,50 MHz were planned and allocated in order to organize a procedure for the issuance of an individual license for the realization of telecommunications through TETRA public mobile network for civil needs;
- Frequency planning of the frequency bands and assignments for provision of radio frequency spectrum to different administrations and companies for the realization of telecommunications through PMR mobile networks with national and local coverage was made. 397 frequencies were provided to several telecommunications operators as a result of this planning.

##### **Fixed radio service and fixed satellite radio service**

- Frequency planning and coordination of 906 radio-relay hops was made;
- The radio frequency range of 1800,00-1900,00 MHz was provided for the realization of telecommunications through public networks from fixed radio service – DECT, such as the WLL of BTC PLC for several towns and villages;
- 18 draft projects for networks from fixed satellite radio service were coordinated.

## **Radio and television broadcasting**

The following issues were settled:

- Identification of free frequency channels and basic parameters for television broadcasting and construction of a third national television network including 11 powerful transmitters and 123 repeater stations on the whole territory of the country – 134 frequency channels;
- Identification of free frequency channels and basic parameters for television broadcasting with local coverage – 32 frequencies;
- Identification of VHF frequencies and basic parameters for radio broadcasting with local coverage- 96 frequencies;
- Identification of free frequency channels for new TV repeater stations for the networks of the Bulgarian National Television (20 frequency assignments) and BTV (20 frequency assignments);
- 10 VHF frequency assignments for the national networks of the Bulgarian National Radio;
- The project for construction of the first TV network for terrestrial digital radio broadcasting in Sofia was approved;
- The projects for construction of transmitting stations of licensed operators were coordinated – 19 stations for radio broadcasting and 1 for TV broadcasting;
- An inter-department coordination of 20 frequency assignments for radio and TV broadcasting was made;
- 56<sup>th</sup> TV channel determined for the city of Shoumen is still not used by the Bulgarian National Television. Disengaging channel 5 would give an opportunity for planning of about 20 VHF radio stations in North-East Bulgaria.

### **5. ELECTROMAGNETIC COMPATIBILITY (EMC)**

- Some interferences of the electromagnetic compatibility were found – specific broadband interfering signals from local sources within the radio frequency range of 150 MHz in Sofia region. For that reason there was a temporary interruption in the provision of radio frequencies for this range on the territory of Sofia until the cause was identified and removed. The problem was referred to the National Radio Frequency Spectrum Council in order to be competently solved;
- The LEGBAC system of was implemented with respect to the study of the electromagnetic compatibility of VHF-FM radio broadcasting stations with aviation radio services ILS and VOR;
- 567 studies of EMC of Bulgarian and foreign VHF-FM radio broadcasting stations were made. The studies concerned all changes in the technical and geographical parameters. They were performed at the same time as the AIRNAV and LEGBAC programs in order to guarantee greater reliability of the results;
- A common database for the technical and geographical parameters of Bulgarian and foreign VHF-FM radio broadcasting stations was kept;
- CRC worked together with the Ministry of Interior on discovering the potential sources of interfering signals in the 162 - 174 MHz frequency band. A module for determination of intermodulation products of the 162 - 174 MHz frequency band was realized;
- CRC and the State Enterprise 'Air Traffic Control' worked together on detecting the sources interfering the aviation equipment;
- A methodology for measurement of inter-modulation products of broadcasting stations was developed;
- Check-up was made on draft projects – 'Technology' section of VHF-FM and TV operators;
- Check-up was made on projects of RRL and VSAT stations.