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III. MANAGEMENT OF THE RADIO FREQUENCY SPECTRUM

1. PROVISION OF FREQUENCY RESOURCES BY WAY OF UPDATING THE NATIONAL FREQUENCY PLAN

By Decision No 305 / 21 May 2002 of the Council of Ministers, the National Plan for Radio Frequency Spectrum Allocation of radio frequencies and radio frequency bands for civil needs, for the defense and security needs as well as for shared use among them (National Frequency Plan) was updated, aiming at provision of radio frequency resources for civil needs and harmonization with the European allocation of radio frequency spectrum. The update involved the following changes:

The frequency ranges from 1400 MHz to 1670 MHz were re-planned and 13 new frequency bands were opened in maximum harmonization with the ITU Radio Regulations and the European Table of Frequency Allocations (ERC REPORT 25 – revised in January 2002) taking into consideration the existing national specificities.

- Nine new notes were added (154 to 162).
- Four of the existing notes were amended (45, 87, 88 и 135).

The update of the National Frequency Plan ensured:

Greater harmonization with the European frequency allocations, particularly with respect to statutory general limitations such as adding bands 1400-1427 MHz and 2690-2700 MHz to Note 88 prohibiting broadcasting within these ranges;

Harmonized radio frequency resource for fixed satellite radio service;

Partial harmonization of the bands from 1427 to 1670 MHz allocating them for the needs of defense and security for fixed radio service systems;

Clearly established priority for the Global Maritime Distress and Safety System (GMDSS) within the frequency bands 1530-1544 MHz and 1626.5-1645.5 MHz;

Better harmonization for the needs of radio broadcasting;

Specification of the conditions for shared use of one and the same frequency bands by different radio services;

Release of new frequency bands and update of the existing ones for civil needs;

Separation, reallocation and differentiation of frequency bands for new radio services;

Harmonization of frequency bands with the Radio Regulations and the European Frequency Allocation Table (ERC REP 25 – revised in January 2002);

New and updated frequency bands and frequencies for civil needs to be used by short-range radio equipment;

New and updated frequency bands for civil needs to be used for GSM applications within the ranges of 900 and 1800 MHz;

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 (ERC REP 25 – revised in January 2002);

Change of the users of separate frequency bands in order to provide frequency resource for different radio services.

2. EFFICIENT UTILIZATION OF THE FREQUENCY RESOURCES

- Preparation of technical parameters and requirements for construction, maintenance and operation of private telecommunications networks making use of radio frequency band for civil needs;
- Preparation of technical parameters and requirements for construction, maintenance and operation of public telecommunications networks making use of radio frequency band for civil needs;
- Harmonization when determining the radio frequency band and assigning radio frequencies for new technologies;

- Frequency provision and preparation of the technical characteristics and parameters for introduction of new digital technologies for professional applications;
- Study of the on-site electromagnetic compatibility and between the radio services;
- Frequency planning of telecommunications networks making use of radio frequency spectrum for civil needs according to the methods developed in recommendations of ITU and CEPT for sharing of the same frequency bands for different frequency allocations;
- Development of national frequency allocations for radio services in accordance with the recommendations of ITU and CEPT;
- Preparation of a draft Ordinance on the technical norms and rules, the procedure and conditions of design, construction, operation and supervision of local transmitters for analogue terrestrial broadcasting;
- Frequency planning for development of the radio broadcasting networks with national coverage – determination of free VHF bands for Bulgarian National Radio and Darik Radio;
- Preparation for frequency planning of the fourth national VHF radio broadcasting network;
- Continuation of the study for implementation of terrestrial digital television;
- Continuation of the study for implementation of terrestrial digital radio;
- In view of achieving European harmonization, it was considered in detail which decisions of the Electronic Communications Committee (ECC) Bulgaria should join and proposals were made for review of the former positions of Bulgaria with regard to the adopted decisions;
- Specification of the technical parameters and requirements in the preparation of a draft Ordinance on the rules and procedures for granting individual licenses for construction, maintenance and operation of PMR private telecommunications networks without a tender or contest;
- Classification of the criteria for allocation of radio frequency spectrum to a mobile radio service in new licenses or amendments to the issued licenses was performed;
- Specification of the granted radio frequency spectrum, allocation of an additional band and reallocation of the frequency bands at 900 and 1800 MHz for construction, maintenance and operation of public telecommunications mobile cellular GSM networks with national coverage and in compliance with conditions of the RF spectrum allocation such as non-discrimination and efficient operation; The non-discrimination principle predetermines an allocation of equal in size frequency resources within the two bands 900 and 1800 MHz for the existing operators;
- Frequency assignment, coordination and allocation of a radio frequency band for temporary use on the territory of the Republic of Bulgaria;
- The radio frequencies and RF bands for mobile radio service designated for civil needs were internally coordinated with the interested authorities;
- A significant frequency separation of the fixed radio service networks of the big operators was done and some frequency bands were specified to be used with priority by different consumers – Ministry of Internal Affairs, Ministry of Defense, Bulgarian Telecommunications Company, Radio Telecommunication Company, Cosmo Bulgaria Mobile;
- The development of national frequency allocations for fixed radio service continued. The frequency allocations within the ranges of 3 GHz, 7 GHz, 8 GHz, 10 GHz, 11 GHz, 18 GHz, 23 GHz and 26 GHz were revised and the ranges of 4 GHz and 6 GHz were planned in the long run.

3. PROPOSALS FOR UPDATE OF THE NATIONAL FREQUENCY PLAN FILED WITH THE NATIONAL RADIO FREQUENCY SPECTRUM COUNCIL

- Allocation of the frequency band 60–63 MHz for civil needs in compliance with ERC REPORT 25 (as revised in January 2002), EU footnotes – EU1 and the requirements of Recommendation T/R 25-08 E for duplex channels;
- Addition of “Mobile satellite” (service) (earth-to-space) within the frequency band 137-138 MHz for the needs of S-PCS<1 GHz;

- Allocation of the frequency bands 153.450-153.850 MHz and 153.900-153.975 MHz for civil needs in compliance with ERC REPORT 25 and the requirements of Recommendation T/R 25-08 E for duplex channels;
- Allocation of the frequency bands 157.225-157.275 and 161.725-161.775 MHz for civil needs in compliance with ERC REPORT 25 and the requirements of Recommendation T/R 25-08 E for duplex channels;
- Allocation of the frequency bands 162.875-174 MHz for civil needs in compliance with ERC REPORT 25 and the requirements of Recommendation T/R 25-08 E for duplex channels;
- Discussion on the issues included in Note 49 of the National Frequency Plan concerning the equivalent change of frequency bands in the range 300 MHz used for civil needs and the range 400 MHz used for defense and security needs;
- Release of frequency bands 380-382 MHz and 390-392 MHz for the needs of the national mobile digital radio communication system "TETRA – Emergency" as follows:
 - until the end of 2002 in Sofia;
 - until the end of 2003 in the whole country in accordance with the Telecommunications Sector Policy of the Republic of Bulgaria;
- Provision of harmonized frequency bands 380.000-380.150 MHz and 445.2-445.3 MHz for DMO channels of TETRA emergency and civil, complying with the requirements of ERC/DEC/(01)19 и ERC/DEC/(01)21;
- Harmonization of frequency bands 478-494 MHz, 502-510 MHz, 590-614 MHz, 646-686 MHz, 726-758 MHz, 766-790 MHz, in compliance with ERC REPORT 25, which according to the National Frequency Plan are envisaged for aeronautical radio navigation and broadcasting by CIVIL, DEFENSE AND SECURITY users;
- Release of frequency bands 876-880 MHz and 921-925 MHz for the needs of GSM-R in compliance with the requirements of Recommendation T/R 25-09 and ECC/DEC/(02)05;
- Release of minimum 2X(2X10+5) MHz in the frequency bands 1900-1980 MHz and 2110-2170 MHz for licensing of 2 UMTS operators in compliance with the Telecommunications Sector Policy of the Republic of Bulgaria;
- "Radio navigation" (service) must be added in the frequency band 3300–3400 MHz in the column "Radio services" or the deletion of the country from Note 5.430 of the Radio Regulations must be proposed;
- "Defense and security" must be possibly deleted from the column "Users" in the frequency band 3400–3500 MHz and "Note 48" must be added to column "Radio services"; This proposal is made because of the necessity of the provision of frequency resource for the fixed wireless access systems (FWA) in harmonization with ERC REPORT 25;
- "Note 81" must be added to column "Radio services" in the frequency bands 5470-5650 MHz and 5650-5725 MHz with the aim of the introduction of "HIPERLAN". Reasons for such a change are provided by ERC REPORT 25;
- The frequency band 25.5–26.5 GHz must be divided in two bands – 25.5–26.25 GHz and 26.25–26.5 GHz – the first one will remain for civil needs and the second one will be designated for shared use, as will be specified in column "Users"; Reasons for such a change are provided by ERC REPORT 25 and Recommendation ITU-R F.748-4 which specifies the allocations of fixed radio service systems; The band 24.5–26.25 GHz is divided into 2 symmetrical sub-bands: 24.5–25.5 GHz for low channels and 25.5–26.5 GHz for high channels; In the National Frequency Plan the low channels fall into 2 frequency bands – 24.5–25.25 GHz (for civil needs only) and 25.25–25.5 GHz (for shared use). Their duplex frequency bands must be used by the same users, i.e. 26.5–26.25 GHz for civil needs only and 26.25 – 26.5 GHz for shared use.
- With respect to the adjustment in Note 70 the term envisaged for release of the whole range 646–686 MHz /43–47 TV channel/ must be specified and determined to be 31 December 2003.

- Note 81 is amended as follows: “81. The frequency bands 5150–5350 MHz, 5470–5725 MHz and 17.1–17.3 GHz are also used for civil needs for HIPERLAN. Reasons for this are provided by the harmonization with ERC Report 25;
- Note 165 is amended as follows: “165. Provisions must be made for practical protection of the future research in radio astronomy within the frequency band 1660.5–1668.4 MHz”. Reasons for this change are the duplication of Note 161 and Note 165 and the harmonization with Note 5.149 and Note 5.379 A of the Radio Regulations.

4. USE OF THE RADIO FREQUENCY SPECTRUM

Mobile radio service

- Frequency bands and allocations of radio frequencies were planned as to grant RF spectrum to different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 48.500–58.000 MHz – allocated for use by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 63.000–87.500 MHz – partially released RF spectrum and designated for use by mobile radio service;
- 146.000-148.000 MHz – allocated for use by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 148.000-148.950 MHz – allocated for use by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 150.050-156.5125 MHz – granted to different establishments and companies for construction, maintenance and operation of private mobile paging networks;
- 156.5375–156.7625 MHz – allocated for use by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with local coverage; after additional approval by the Ministry of Transport and Communications the frequency bands for Maritime Mobile Service were used on the mainland, as well;
- 156.8375-158.375 MHz – allocated for use by establishments and companies for construction, maintenance and operation of PMR private mobile networks with local coverage; after additional approval by the Ministry of Transport and Communications the frequency bands for Maritime Mobile Service were used on the mainland, as well;
- 160.625-162.875 MHz – allocated for use by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 306.55-309.625 MHz – allocated for use until the end of 2005 by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 342.55-344 MHz – allocated for use until the end of 2005 by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 440.000-450.000 MHz – allocated for shared use with the Defense and Security by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 450.000-460.000/460.000–470.000 MHz – allocated for shared use with the Defense and Security by different establishments and companies for construction, maintenance and operation of PMR private mobile networks with national and local coverage;
- 880.100–914.900/925.100–959.900 MHz – allocated for shared use with the Defense and Security by operators licensed for construction, maintenance and operation of GSM public mobile networks with national coverage;

- 1710.000-1785.000/1805.000-1880.000 MHz – allocated for shared use with the Defense and Security by operators licensed for construction, maintenance and operation of GSM public mobile networks with national coverage.

Fixed radio service

Radio frequency spectrum for 496 radio-relay hops is ensured.

Approval of preliminary projects for fixed satellite service networks – 8 items;

Coordination of 3 frequencies for the needs of KFOR in relation to the use of frequency bands from fixed service.

Radio and television broadcasting

- Identification of free VHF frequencies for radio broadcasting with local coverage – 32 frequencies; Frequency planning at the request of the Council for Electronic Media in 7 towns – Pazardzhik, Pernik, Lovech, Montana, Gabrovo, Silistra, Razgrad;
- Identification of free frequency channels and basic parameters for TV broadcasting and construction of a third national TV network including 17 basic transmitters and 119 repeater stations on the whole territory of the country – 136 frequency channels;
- Identification of free frequency channels and basic parameters for TV broadcasting with local coverage – 17 frequency channels; Frequency planning at the request of the Council for Electronic Media in 7 towns – Sofia, Burgas, Shumen, Dobrich, Pleven, Kazanlak, Sopot, Kardzhali;
- Identification of free frequency channels for new TV repeater stations for the networks of Bulgarian National Television and bTV in 7 settlements – the village of Ravna (municipality of Chiprovtsi), the villages of Iskretz and Elenov dol (municipality of Svoege), the village of Kravenik (municipality of Sevlievo), the village of Kushla (municipality of Zlatograd), the village of Benkovski (municipality of Dobrich) and the village of Studena (municipality of Madan) – 14 frequency assignments;
- Determination of 14 frequency allocations in L-band for digital radio T-DAB;
- Approval of preliminary projects for construction of transmitting stations of licensed operators – 26 for radio broadcasting and 19 for TV broadcasting;
- Interdepartmental coordination of 410 frequency assignments for radio and TV broadcasting has been carried out;
- A database for the frequencies assigned for TV and radio broadcasting was compiled and maintained;
- Making corrections in the database of the location, geographic coordinates, altitude, configuration of the antenna system and the maximum effective radiated power of about 150 TV stations;
- An updated list of the National Authority Radio and TV Stations' sites located within the 20-km border area was prepared and coordinated with BTC. The list is published at the web page of CRC.

5. ELECTROMAGNETIC COMPATIBILITY

With reference to creation of conditions for electromagnetic compatibility aiming at better operation of radio transmitting facilities the following was done in 2002:

- Own software was developed for study of the electromagnetic compatibility of VHF FM radio broadcasting stations with the aeronautical navigation services;
- A database was created and maintained with respect to the study of the electromagnetic compatibility of VHF FM radio broadcasting stations with the aeronautical radio services;
- CRC collaborates with Air Traffic Control Administration to identify the sources of interference to the equipment for aeronautical radio navigation;

A methodology for measurement of inter-modulation products of broadcasting stations was developed.

- Checkup was made on projects – “Technology” section of VHF FM operators.
- Checkup was made on projects of RRL and VSAT stations.

6. PREPARATION OF THE ACCESSION OF BULGARIA TO THE BERLIN AGREEMENT FOR COORDINATION OF THE FREQUENCIES BETWEEN 29.7 MHZ AND 39.5 GHZ FOR THE MOBILE AND FIXED SERVICES

CRC experts took part in the work of Technical Group HCM, Subgroup on Fixed Radio Service, within the framework of Berlin/Vienna Agreement – Romania, February 2002.

A preliminary plan was coordinated for joining Bulgaria to Berlin Agreement.

A bilateral meeting of experts was held in September 2002 in Romania at the General Inspectorate of Communications and Information Technologies with the aim to develop technical criteria and procedures for the bilateral arrangements of Berlin/Vienna Agreement.