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III. ACTIVITIES UNDER THE LAW ON ELECTRONIC COMMUNICATIONS AND THE LAW ON ELECTRONIC DOCUMENT AND ELECTRONIC SIGNATURE

1. Activities in implementation of the CRC's priorities for 2016

1.1. Effective management of scarce resources

1.1.1. Radio frequency spectrum

In the everyday civil life, communications through networks using radio frequency spectrum – sound and television broadcasting, mobile telephony and wireless Internet access become more and more important. Consumer interest in innovative high-speed mobile services steadily increases. To meet the increasing civil needs, sufficient amount of frequency resource for development of high-capacity networks has to be provided. This requires, the natural scarce resource – radio frequency spectrum to be managed and used effectively in order to realize the maximum economic and social benefits for the country. In 2016 one of the CRC's main priorities was related to this objective. The Commission continued to manage effectively the radio frequency spectrum, allocated for civil needs in accordance with the European policy and national interests and characteristics.

In the past year, in conducting an active and transparent dialogue with the shareholders and taking into account business and end-users' interest, the Commission ensured conditions for the entry of new technologies and services on the market.

With regard to ensure conditions for efficient use of 1800 MHz band, meetings with the stakeholders were held in the first half of 2016. As a result, the mobile operators were granted additional spectrum in the 1800 MHz radio frequency band.

In 2016 a number of activities were taken to ensure conditions for an efficient and harmonized use of the 800 MHz frequency band (790-862 MHz radio frequency band), so called first digital dividend:

- studies and analysis have been carried out on opportunities for using the 800 MHz frequency band for terrestrial network capable of providing electronic communications services;
- the 64th - channel which was used for terrestrial digital television was released for use as a second digital dividend;
- with the active participation of the CRC's representatives in an interdepartmental working group to ensure the possibility of using the 800 MHz range in compliance with Decision 2010/267/EU¹ and for the purpose of implementing the provisions of Decision 243/2012/EU², 811-821 MHz and 852-862 MHz (2x10 MHz) band in the National plan for Radio Frequency Spectrum Allocation were allocated for use by terrestrial networks capable of providing electronic communication services, including LTE services;
- after examining and analysing good European practices for the amount of fees in the Tariff of fees collected by CRC under the LEC, one-off administrative fee and an annual fee for the use of 800 MHz frequency band were determined;

¹ Decision 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

² Decision 243/2012/EU of the European Parliament and of the Council establishing a multiannual radio spectrum policy programme

- in the Technical requirements for operation of terrestrial networks capable of providing electronic communications services, the conditions for using 800 MHz range in compliance with Decision 2010/267/EC were specified;

- CRC opened a public consultation procedure to determine the interest in the use of 800 MHz frequency band. With a view to provide conditions for building of 4G networks (LTE) in the country, the Commission raised issues of public relevance for the future use of the 800 MHz band with respect to the principles of transparency, publicity and consultation underlying in the LEC provisions.

The remaining spectrum in the 800 MHz band is currently reserved for use for national security and Bulgaria is one of the last EU Member States that still has difficulties with allocation of that resource for civil needs. The minimum required frequency resource for construction of a fully functional LTE network with national coverage is 2x10 MHz for one undertaking. In this connection, the released spectrum 2x10 MHz in 800 MHz range is extremely insufficient regarding the number of undertakings, the level of market development, and consumer demand for high-quality communications services. Having regard to this, the CRC considers that the entire frequency resource in 800 MHz range used for the national security, should be released for civil needs, which will create conditions for effective competition in the mobile services market. The frequency resource release is not of the competences of the CRC.

In order to ensure the conditions for effective and harmonized use of 700 MHz radio frequency range (694-790 MHz radio frequency band), so called second digital dividend, within the interdepartmental working group with a task “to prepare an analysis and proposals at expert level to take action on harmonisation of the 700 MHz frequency band”, the CRC has submitted “An analysis on the use of the 694-790 MHz radio frequency band (700 MHz range) for civil needs and activities taken by the CRC to ensure the harmonisation of the conditions for its use”. The proposals in the analysis should be taken by the state to ensure a harmonized use of the 700 MHz band.

In order to provide radio frequency spectrum for wireless broadband networks, in 2016 the CRC continued its work on assessing the use of the 700 MHz band for civil needs. CRC’s representatives continued to implement the necessary activities related to the process of re-planning of the spectrum: negotiations, coordination, modification of the digital plan Geneva (GE06D) – 2006, transition to and introduction of the new plan for broadcasting in 470-694 MHz frequency band. In order to enable optimization and re-planning of digital television networks in Europe, within the South European Digital Dividend Forum (SEDDIF), in which Bulgaria is a member, an analysis and assessment for optimization of the 470-694 MHz radio frequency band for broadcasting were carried out. At the meetings with the participation of representatives of Serbia, Macedonia, Turkey, Ukraine and Bulgaria, the new frequency plans of these countries with regard to identified incompatibilities in the used frequency channels and frequency assignments, were discussed.

In 2016, proposals and opinions were prepared for updating the State Radio Spectrum Planning and Allocation Policy related to the implementation of decisions adopted at the World Radiocommunication Conference that was held in 2015 (WRC-15). The activities on radio frequency spectrum planning and allocation in the Republic of Bulgaria for networks, capable of providing electronic communications services, mobile and fixed radio service networks,

broadcasting networks, satellite networks and other specific applications³, using the radio frequency spectrum were specified in the State Policy. The trends and guidelines on radio frequency spectrum planning and allocation in the Republic of Bulgaria in the short term – by the end of 2017, medium term – by the end of 2019 and long term – after 2020, were determined.

In the past year an analysis on the current provisions and necessity of amendments of the primary and secondary legislation related to the satellite coordination was carried out. As a result, “A draft for amendment and supplement of the Law on Electronic Communications and a draft of the Rules for international coordination and registration of positions on geostationary orbit with relevant radio frequency spectrum and radio frequency spectrum for non-geostationary satellite network. Issuance of authorisations and provision of additional radio frequency spectrum” was prepared.

Allocation, planning, assignment and effective use of the radio frequency spectrum

Following one of its main priorities – effective management and efficient use of the scarce resource – radio frequency spectrum, CRC has studied and analysed the necessity of amendment and supplement of the secondary legislation relating to the management of the radio frequency resource. As a result of this analysis the following secondary legislative acts were amended and supplemented:

- Rules for carrying out electronic communications through radio equipment using radio frequency spectrum, which does not need to be individually assigned (The Rules);
- Technical requirements for ensuring interoperability of the consumer’s digital television equipment;
- Technical requirements for operation of terrestrial networks for provision of electronic communications services;
- Technical requirements for operation of land mobile networks and the related equipment;
- Technical requirements for operation of electronic communication networks of the fixed radio service and related equipment.

With the amendment and supplement of the mentioned acts in the Bulgarian legislation have been introduced the provisions of the new decisions of the European Commission and the Electronic Communication Committee (ECC) for harmonized use of the radio frequency spectrum⁴.

³ Public safety networks, protection of the population and disaster response; satellite radio navigation systems; mobile networks for railway needs; short-range devices; equipment for programmes and special events preparation; machine-to-machine communication systems; amateur service networks

⁴Decision for implementation 2016/339/EU of the Commission on harmonisation of the 2 010-2 025 MHz frequency band for portable or mobile wireless video links and cordless cameras used for programme making and special events

Electronic Communication Committee (ECC) Decisions:

ECC/DEC (11)03 on harmonised use of frequencies for Citizens’ Band (CB) radio equipment;

ECC/DEC (15)05 on the harmonised frequency range 446.0-446.2 MHz, technical characteristics, exemption from individual licensing and free carriage and use of analogue and digital PMR 446 applications;

ECC/DEC (05)01 on the use of the band 27.5-29.5 GHz by the Fixed Service and uncoordinated Earth stations of the Fixed-Satellite Service (Earth-to-space);

Through amendment and supplement of the Rules were determined the conditions for use of 1900-1920 MHz and 2010-2025 MHz radio frequency bands for portable or mobile wireless video links and cordless cameras used for programme making and special events (video PMSE) in accordance with Decision 2016/339/EC. Conditions were also determined for use of radio frequency spectrum by non-specific short-range devices, localization, tracking and data acquisition systems, network systems for medical purposes, wireless industrial applications used for wireless links in industrial environment, transport telematics, radio microphones, auxiliary hearing aids and wireless audio PMSE equipments, radio frequency identification devices. In accordance with ECC decisions: the terms and conditions for use of radio frequency spectrum by radio equipment operating in the CB 27 MHz and 446 MHz band were amended; the terms and conditions for use of radio frequency spectrum by radio equipment operating under control of satellite electronic communication networks were amended and supplemented; conditions for providing mobile communications services on board vessels (MCV services) using UMTS and LTE networks were determined.

Through amendment and supplement of the Technical requirements for operation of terrestrial networks for provision of electronic communications services, conditions for usage of the resource in 800 MHz band were provided, which would result in satisfying the increased high-speed data service demand, increase of the competitiveness, stimulating the deployment of wireless broadband communications and would improve the coverage of existing mobile networks.

Through amendment of the Technical requirements for operation of land mobile networks and related equipment, the conditions for the operation of mobile terrestrial networks using UMTS technology in 1900-1920 MHz and 2010-2025 MHz radio frequency bands, were eliminated.

In order to meet the requirements of Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 regarding the universal service and users' rights relating to the electronic communication networks and services, were developed and adopted Technical requirements for ensuring interoperability of the consumer's digital television equipment, with which the conditions for provision of their operative interoperability were determined.

In 2016 the Technical requirements for the operation of electronic communication networks of the fixed radio service and the related equipment were amended, in connection with

ECC/DEC (05)08 on the availability of frequency bands for high density applications in the Fixed-satellite services (space-to-Earth and Earth-to-space);

ECC/DEC (06)02 on Exemption from Individual Licensing of low e.i.r.p. satellite terminals (LEST) operating within the frequency bands 10.70 - 12.75 GHz or 19.70 - 20.20 GHz Space-to-Earth and 14.00 - 14.25 GHz or 29.50 - 30.00 GHz Earth-to-Space;

ECC/DEC (06)03 on Exemption from Individual Licensing of high e.i.r.p. satellite terminals (HEST) operating within the frequency bands 10.70 - 12.75 GHz or 19.70 - 20.20 GHz space-to-Earth and 14.00 - 14.25 GHz or 29.50 - 30.00 GHz Earth-to-space;

ECC/DEC/(09)04 on exemption from individual licensing and the free circulation and use of transmit-only mobile satellite terminals operating in the Mobile-Satellite Service allocations in the 1613.8 - 1626.5 MHz band;

ECC/DEC (15)04 on the harmonised use, free circulation and exemption from individual licensing of Land and Maritime Earth Stations on Mobile Platforms (ESOMPs) operating with NGSO FSS satellite systems in the frequency ranges 17.3-20.2 GHz, 27.5-29.1 GHz and 29.5-30.0 GHz;

ECC/DEC (08)08 on the harmonised use of GSM systems in the 900 MHz and 1800 MHz bands, UMTS systems in the 2 GHz band and LTE systems in the 1800 MHz and 2.6 GHz bands on board vessels;

ERC Recommendation 70-03 relating to the use of Short Range Devices (SRD).

the necessity to eliminate the of 21.2 – 23.6 GHz radio frequency band in accordance with the WRC-12 decisions.

In accordance with the amendments and supplements of the above secondary legislative acts in the ECO Frequency Information System (EFIS), the data on the usage of the frequency resource in the Republic of Bulgaria has been updated.

In 2016 the CRC continued to raise issues of public relevance for the development of electronic communications respecting the principles of transparency, publicity and consultation underlying the LEC provisions.

Public consultations on studying business interest in use of internationally coordinated 21st and 27th TV channels on the territory of Sofia were held. Consultation were also held in connection with NURTS BULGARIA EAD request for extending the period of validity of the authorisation for usage of individually assigned scarce resource – radio frequency spectrum for carrying out electronic communications through electronic communication networks for terrestrial digital broadcasting of TV signals on the territory of Sofia and for replacement of the assigned 64th TV channel. As a result – interest in the use of 21st and 27th TV channels has not been reported and the assigned 64th TV channel has been replaced by 27th TV channel, the period of validity of the authorisation was expended with 11 years.

Taking in consideration the public significance of terrestrial digital television as the main means of free access to TV content in the country and in order to create environment for development of competition in the provision of the service, in the past year the CRC held public consultations regarding existence of interest by the new players for issuing an authorisation for construction of network for terrestrial digital television broadcasting with national coverage in accordance with DVB-T2 standard. As a result, no interest for issuing an authorisation was reported by the undertakings.

Mobile radio service

In 2016 CRC redistributed the radio frequency spectrum in the 1800 MHz range and assigned an additional resource from this range for all mobile undertakings. As a result, the authorizations of Bulgarian Telecommunication Company EAD, Mobiltel EAD, Telenor Bulgaria EAD and Max Telecom OOD have been amended and supplemented for use of individually assigned scarce resource – radio frequency spectrum in 1800 MHz range for carrying out electronic communications through terrestrial network capable of providing electronic communications services. By redistribution of the radio frequency spectrum, each undertaking was provided with equivalent frequency resource of 2x15 MHz for expansion, modernisation and development of existing networks, by which the provision of mobile broadband services for consumers is favoured.

Two temporary authorisations for the use of individually assigned scarce resource - radio frequency spectrum in 2 GHz range has been issued, respectively to:

BULGARIAN TELECOMMUNICATION COMPANY EAD with assigned frequency resource of 2x5 MHz for testing new technical equipment in the UMTS network of the undertaking;

– MAX TELECOM OOD was assigned frequency resource of 2x15 MHz for testing new technical equipment in the LTE network of the undertaking.

The CRC has issued temporary authorisations for the use of individually assigned scarce resource – frequency spectrum in the 876-880/921-925 MHz bands for provision of electronic communications for own needs through terrestrial mobile GSM-R network, to the National railway Infrastructure Company on the territory of the railway line Sofia - Proslav.

After an analysis of the radio frequency spectrum assigned for use and a national coordination and agreement of radio frequencies and frequency bands with all state authorities, departments and agencies concerned, 317 radio frequency channels (221 simplex and 48 duplex) were provided to the undertakings, of which 220 radio frequencies for the construction of 180 new radio networks for the provision of electronic communications for own needs through mobile radio service electronic communication network. The total number of built networks reached 1954.

On Fig. 36 is graphically presented the ratio of the number of base stations operating with different technologies. As evident, in 2016 the number of base stations operating with LTE technology increased significantly due to increased commercial offer of mobile services through this technology.

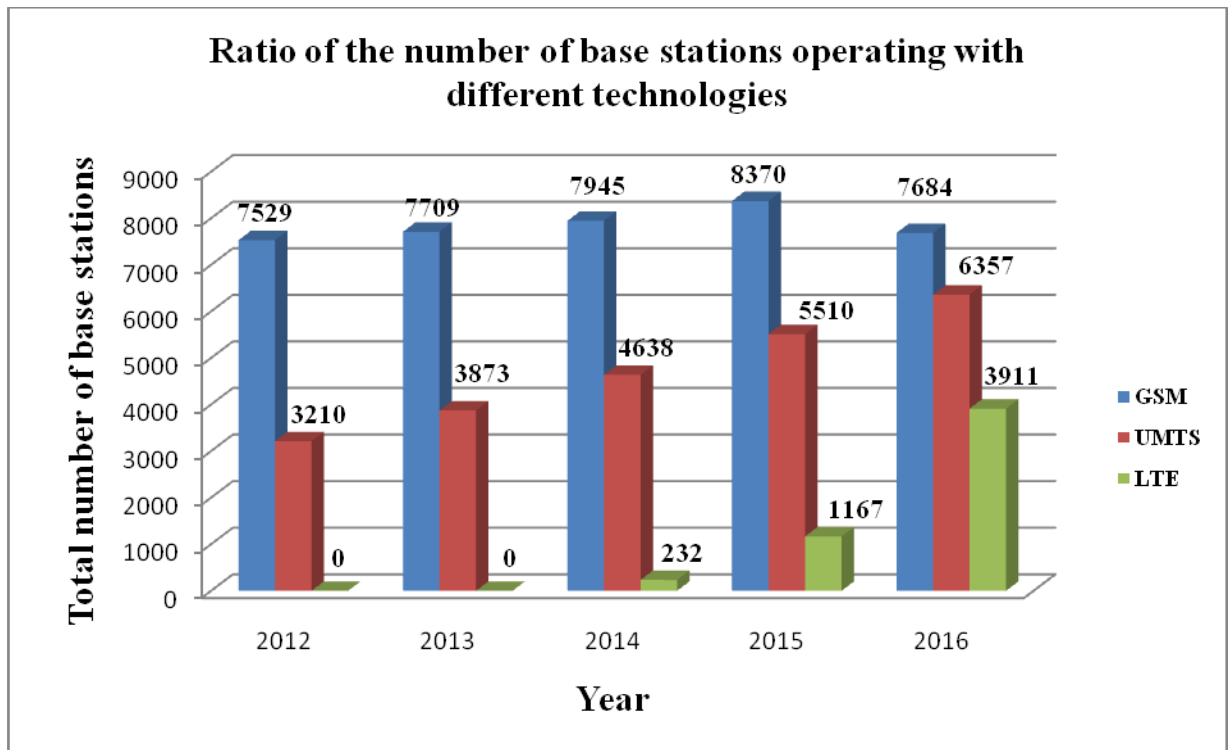


Fig. 36

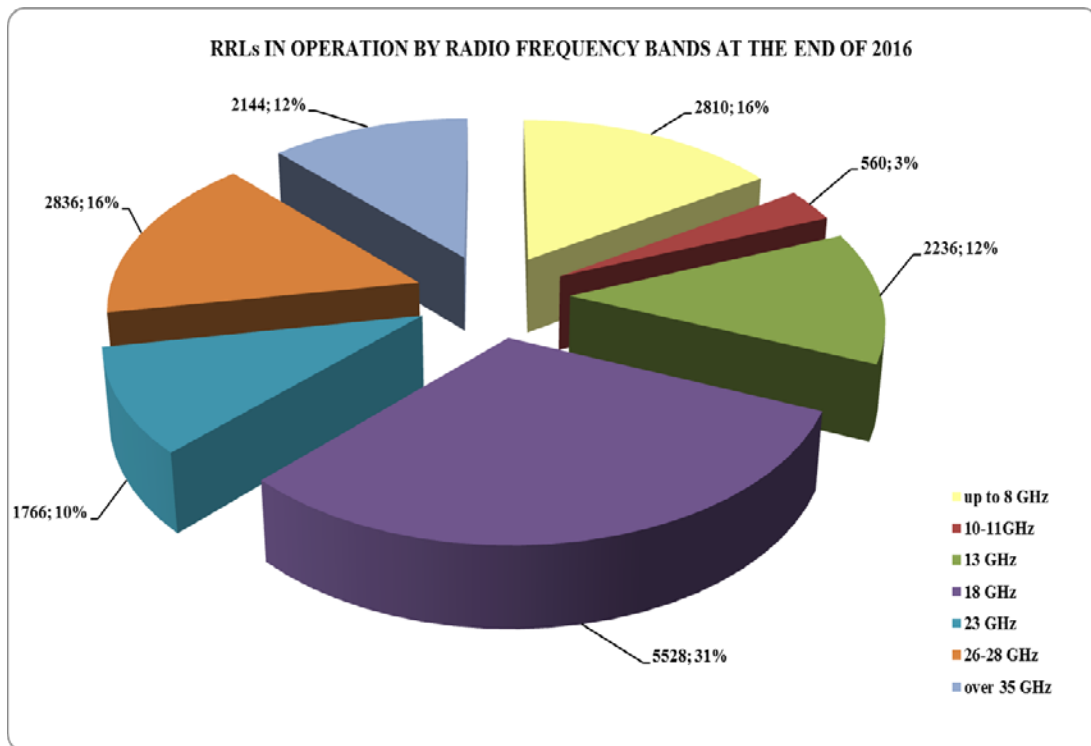
Fixed radio service

In 2016, 60 amendments and supplements were made to the technical data of a total of 5031 one-way radio relay links(RRLs), including the provision of radio frequency spectrum to 1975 new links, thus their total number increased to 17880 compared to 17301 for 2015, i.e. the number of operating RRLs increased by 3.4% compared to the end of 2015. The trend for deployment of high-tech digital systems using XPIC/CCDP technologies continued, as the number of RRLs using these systems reached 8092 at the end of 2016. (an increase of 22.9%

compared to 2015 – 6584 links). In 2016, a high interest to IP-based radio relay transmitters with digital capacity of 200 Mbps to 1 Gbps and adaptive modulation levels from QPSK to 2048 QAM in one direction, was observed. The use of such transmitters creates prerequisites for provision of quality high-speed innovative services to the end users.

Growth in the use of high-frequency bands was reported again, compared to the total number of RRLs. In the 18 GHz band their number reached 5528 (5152 in 2015), which retained the share of 30% in the total number of RRLs at the end of 2016. The construction of high density electronic communication network using the highest-frequency ranges continued. At the end of the year the RRLs in the 23 GHz, 26 GHz, 28 GHz and 38 GHz bands, for which there were authorisations issued for the use of the frequency spectrum, numbered 6628, as a sustainable migration of RRLs from 23 GHz and 26 GHz bands to 28 GHz and 38 GHz bands was observed. The percentage ratio of the four bands remained 37% of the total number of RRLs. In 2016, the coupled radio frequency bands 74-76 GHz and 84-86 GHz usage for high-capacity RRLs continued as their number reached 118 links at the end of the year.

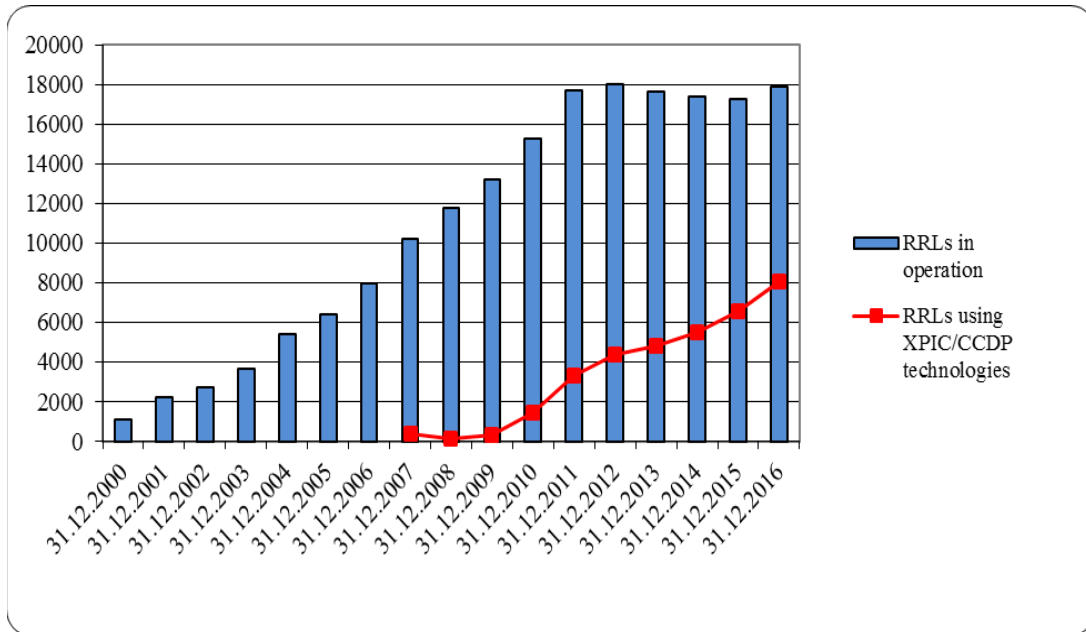
Fig. 37 presents information on the share distribution of the existing RRLs, authorised for usage of individually assigned scarce resource - – radio frequency spectrum for the provision of electronic communication of the point-to-point type, by radio frequency ranges at the end of 2016.



Source: CRC

Fig. 37

Fig.38 presents the operating RRLs by years, compared with the part of them which uses XPIC/CCDP technologies.



Source: CRC

Fig. 38

Through the amendment of the Technical requirements for operation of electronic communication networks of the fixed radio service and the related equipment, the 21.2 – 23.6 GHz radio frequency band was deleted and some editorial amendments were made in order to update the texts in Appendix 1, to Art. 4 “Admissible frequency allocations which can be used for electronic communication networks of the fixed radio service of the point-to-point type “. At the beginning of 2016, CRC issued an authorisation for use of individually assigned scarce resource – radio frequency spectrum for industrial needs. The radio frequency resource was used for testing and conducting manufacturing tests of radar equipment.

Satellite radio services

In 2016 the activity related to regulation of satellite radio services was focused on the coordination of the positions using geostationary orbit from the fixed-satellite (FSS) and broadcasting-satellite (BSS) radio services. The approaching deadlines for launching the first Bulgarian satellite increased considerably the intensity of the coordination process. The goal of this process is to avoid potential interferences to the Bulgarian planned systems on position 1.2° W (BSS) and 56.02° E (FSS), as well as of the additional modification made to the planned position for BSS at 1.9° E. To carry out the coordination activities, analysis was performed of the biweekly circulars (BR International Frequency Information Circular - BRIFIC), issued by the Radiocommunication Bureau of the International Telecommunication Union (ITU), using specialised software products provided to the administrations. Except for the analysis of the biweekly circulars, an analysis was also made of the received proposals

from other administrations to conclude agreements with a view to the successful coordination of the Bulgarian satellite systems.

After analysing all biweekly circulars for 2016, the relevant objections were sent to comply with the regulatory function of the CRC regarding the efficient use and effective management of scarce resource – radio frequency spectrum.

The CRC together with MTITC and in accordance with the terms of the Radio Regulation successfully completed the procedure of conversion from an allotment into assignment of the Bulgarian planned satellite system from fixed-satellite (FSS) radio service of geostationary orbit position 56.02° E.

During the past year activities related to publishing of an application for international coordination of radio frequency bands 13.4-13.65 GHz (space-to- Earth) and 14.5-14.75 GHz (Earth-to-space) were carried out.

In 2016, in accordance with the terms of the Radio Regulation continued the activity on the procedure for notification of the applications for the Bulgarian planned satellite system of broadcasting-satellite service (BSS) on the position of the geostationary orbit 1.2° W, as well as the submitted additional application for modification of the BSS plan on position of the geostationary orbit 1.9° E.

Broadcasting

The Bulgarian National Radio (BNR) is an undertaking of public significance and according to the Law on Radio and Television, the state should take the measures required to ensure its programmes broadcasting throughout the country in implementation of the policy in the field of electronic communications. In this connection CRC extended the period of validity of the undertaking's authorisation for use of individually assigned scarce resource – radio frequency spectrum for carrying out electronic communications through electronic communication networks for terrestrial analogue broadcasting of radio signals on the territory of the Republic of Bulgaria by 15 years.

In 2016, in relation to the request of the Council for Electronic Media (CEM) for the provision of free frequency resources for 8 settlements concerning procedures to hold a competition, information was provided on 25 frequency assignments in the VHF band for the towns of Velingrad, Dupnitsa, Elena, Zlatograd, Lovetch, Nesebar, Pomorie and Tsarevo, including technical parameters, admissible powers, points of broadcasting as well as other technical information.

A total of 20 technical characteristics of electronic communication networks for terrestrial analogue broadcasting of radio signals in VHF range (frequency band 87.5-108.0 MHz) were examined and analysed, of which 1 was of undertaking authorised to use individually assigned scarce resource – radio frequency spectrum for carrying out electronic communications through electronic communication network for terrestrial analogue broadcasting, and with national coverage 19 – of undertakings authorised to use individually assigned scarce resource – radio frequency spectrum, for carrying out electronic communications through electronic communication network for terrestrial analogue broadcasting with local coverage.

With regard to the already issued authorisation for terrestrial digital broadcasting to NURTS BULGARIA EAD, 2 technical characteristics for service area – Sofia were examined and analysed.

National and international coordination

In 2016 in the Advisory Council for national coordination and agreement to the CRC, 3183 radio frequencies and frequency bands were coordinated and agreed. National coordination and agreement with all state authorities, departments and agencies concerned are carried out with the goal to ensure the aeronautical and maritime safety, the protection of national security and the efficient use of the radio frequency spectrum.

Upon requests received from other administrations, international coordination of radio frequency assignments was carried out as follows:

- 9 radio frequency assignments with relevant technical parameters according to the Regional Agreement for usage of the 87.5-108.0 MHz radio frequency band for VHF (FM) sound broadcasting, Geneva, 1984 (Geneva – 1984);
- 2 radio frequency assignments according to the Regional Agreement, Stockholm – 1961, revised in 2006, for terrestrial analogue television broadcasting.

In the past year all publications in biweekly circulars BRIFIC for terrestrial radio services were processed and analysed. As a result, 50 radio frequency assignments of foreign administrations with relevant technical parameters according to the Regional Agreement, Geneva – 1984 were coordinated, while to 2 radio frequency assignments objections were made due to possible interference to Bulgarian radio stations.

The Radiocommunication Bureau was sent a request for addition of 36 radio frequency assignments of Bulgarian VHF radio stations in Plan Geneva – 1984, and 81 radio frequency assignments were recorded in Part B of Plan Geneva-1984.

In 2016, 19 radio frequency assignments were recorded in Plan Geneva – 2006, in accordance with the Regional Agreement relating to the planning of the digital terrestrial broadcasting in the 174-230 MHz and 470-862 MHz frequency bands.

In accordance with the procedures pursuant to Art. 12 of the Radio Regulation of the ITU, 98 (48 for Season A and 50 for Season B) radio frequency assignments for terrestrial analogue and digital broadcasting of radio signals within the HF bands were coordinated.

Applications to record in the Master International Frequency Register pursuant to Art.11.2 of the Radio Regulation were sent for 454 stations to ITU. 401 radio frequency assignments of them were recorded in the Master International Frequency Register, the remaining 53 are pending to be recorded in 2017.

Radio frequency assignments for satellite networks from the biweekly circulars BRIFIC for fixed-satellite and broadcasting-satellite radio services were processed and analysed. As a result of the performed examinations of the technical parameters and the further calculations, correspondence was exchanged with the ITU and the relevant foreign administrations which had filed their requests with the biweekly circulars. In order to protect the Bulgarian positions on geostationary orbit and the assignments for fixed radio service from

interferences, the CRC sent objections, in accordance with the procedural rules of the Radio Regulation, to ITU and to the administrations whose satellite networks might potentially affect us, as follows:

Written objections

- in coordination of non-planned satellite systems and existing Bulgarian terrestrial networks, pursuant to Art. 21 of the Radio Regulation – 12 objections for 20 satellite systems;
- in coordination of satellite networks from the fixed-satellite radio service emitting in Space to Earth direction and possible interference to the feeder link of a satellite from the broadcasting-satellite radio service, pursuant to Art. 7 of Appendix 30A of the Radio Regulation - 9 objections for 30 satellite systems;
- coordination of satellite network on planned position from the broadcasting-satellite radio service and non-planned satellite network, pursuant to Art. 7 of Appendix 30 of the Radio Regulation – 16 objections for 38 satellite systems;
- coordination in exceeding the carrier-to-noise (C/N) ratio for satellite systems from the fixed-satellite radio service in frequency bands 4500-4800 MHz, 6725-7025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz, according to Appendix 30B of the Radio Regulation – 3 objections for 5 satellite systems;
- request for inclusion into coordination when exceeding the noise temperature from non-planned satellite system to satellite system operating in the frequency band 21.4-22 GHz, pursuant to Art. 9.52 of the Radio Regulation – 9 objections for 14 satellite systems.

Objections submitted via specialised ITU applications

- coordination of non-planned satellite station, potentially affecting another non-planned satellite station, pursuant to Art. 9.7 and Art. 9.41 of the Radio Regulation – objections were made for 104 satellite systems, as notices were sent to the relevant administrations;
- coordination of satellite station from broadcasting-satellite radio service and fixed radio service when both are on primary basis, pursuant to Art. 9.11 of the Radio Regulation – objections were made for 3 satellite systems;
- coordination of satellite station using non-geostationary orbit and satellite system on geostationary orbit, pursuant to Art. 9.12A of the Radio Regulation – objections were made for 19 satellite systems;
- coordination of emitting satellite station and receiving station from fixed radio service included in the table of frequency assignments, pursuant to Art.9.14 of the Radio Regulation – objections were made for 6 satellite systems;
- request for exclusion of the territory of the Republic of Bulgaria from the zone of service of a particular satellite system, pursuant to the provision of Art. 23.13/B and Art. 23.13/C of the Radio Regulation – for 1 satellite system, after coordination of the CRC's activities with MTITC.

The protection of the orbital resources of the Republic of Bulgaria for fixed-satellite and broadcasting-satellite radio service from other satellite systems is an important factor for the smooth implementation and operation of the national systems and the modification made from broadcasting-satellite radio service. In addition – coordination allows the smooth operation of radio services in bands on co-primary basis.

Electromagnetic compatibility

During the year, electromagnetic compatibility analysis of 61 Bulgarian and 63 foreign VHF radio broadcasting stations with the aeronautical systems ILS, VOR and COM were carried out.

Due to the identified possible interference while carrying out the analysis for electromagnetic compatibility with the aeronautical radio services, 6 radio frequency assignments were submitted for measurements under the Methodology for measuring A1 type intermodulation products generated by the operation of closely situated VHF-FM radio transmission stations.

1.1.2. Numbering and addressing

In the past year no new authorisations for use of individually assigned scarce resource – numbers were issued. Three undertakings were **withdrawn** the authorisations for use of the recourse – numbers due to systematic non-payment of due fees.

At the end of 2016, the total number of undertakings, to which authorisations for use of individually assigned scarce resource – numbers, for carrying out public electronic communications have been issued, was 30.

In 2016 the undertakings were assigned:

- 1 000 000 numbers for providing mobile services;
- 110 600 geographic numbers;
- 200 numbers after access code 700 – for the Personal Number service;
- 7 addresses (2 national and 5 international signalling point codes).

Due to optimisation of its network, BTC has released 897 000 geographic numbers. Due to optimisation of networks and services of the alternative undertakings or termination of their activities in 2016 were released as follows:

- 38 000 geographic numbers;
- 1000 numbers after access code 800 – free phone services;
- 2 numbers after access code 118 – enquiry service;
- 8 national signalling point codes (NSPC);
- 3 international signalling point codes (ISPC);
- 2 access code for the “carrier selection”.

The allocation of geographic numbers assigned to the undertakings at the end of 2016 is presented on Fig. 39.

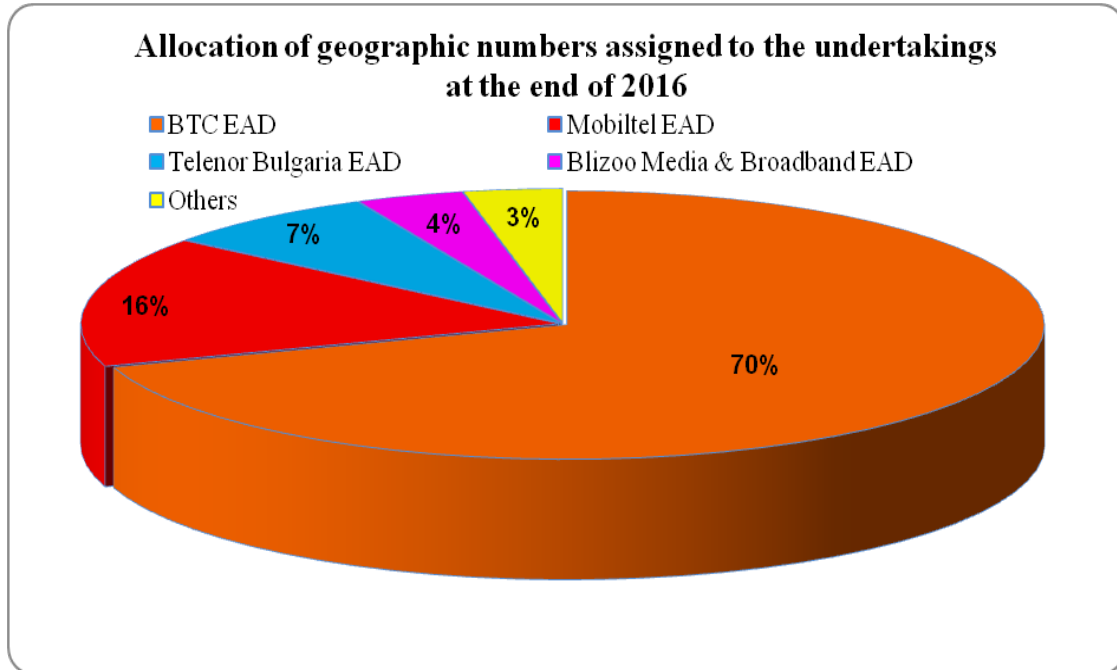


Fig. 39

The allocation of non-geographic numbers assigned to the undertakings at the end of 2016 is presented on the next figure.

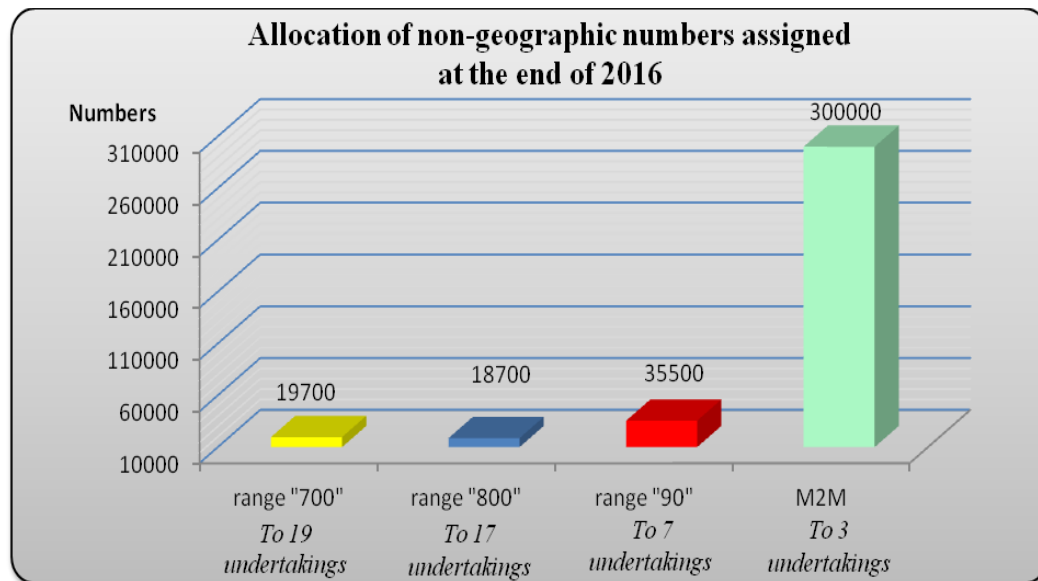


Fig. 40

In recent years there has been a rapid development of services using Machine-to-Machine (M2M) communication. At first, such services used numbers from the range for provision of services through mobile terrestrial network. In order to meet the increased demand for resource – numbers for M2M, at the end of 2012 in the Bulgarian National Numbering Plan (NNP), “430”

range was separated for access to services using M2M communication with maximum National Significant Number (N(S)N) length – 12 digits. The legislation envisaged these range numbers to be provided from the beginning of 2013, the mandatory use of the numbers provided entered into force since 01.01.2014 г. Migration of the used numbers to M2M applications in the new range before the above deadline was not mandatory.

The numbering resource of the “430” range was assigned to three undertakings – Mobilitel EAD, BTC EAD and Telenor Bulgaria EAD. Data for the numbers provided to the end users as of 31.12.2016 is presented in the following table:

Table 11

Numbers, provided to end users of M2M services as of 31.12.2016		
Undertaking	Number of numbers of ranges for access to mobile networks	Number of numbers of “430” range
BTC	185 929	169
MOBILTEL	333 357	365
TELENOR	325 493	3 036

It makes an impression the small share of the numbers of “430” range in the total volume of numbers assigned for M2M applications. CRC will continue monitoring of the development of this type of service and usage of number resource for them.

1.1.3. Number portability

In 2016 a large number of end-users benefited from their right to retain the number used when changing the undertaking providing the relevant service. The trend, the number of the ported numbers to mobile networks to be higher than the number of ported numbers in fixed networks, continued. Despite the decline in the rate of increase of ported numbers in fixed networks, a considerable number of end-users benefited from their right of that type number portability.

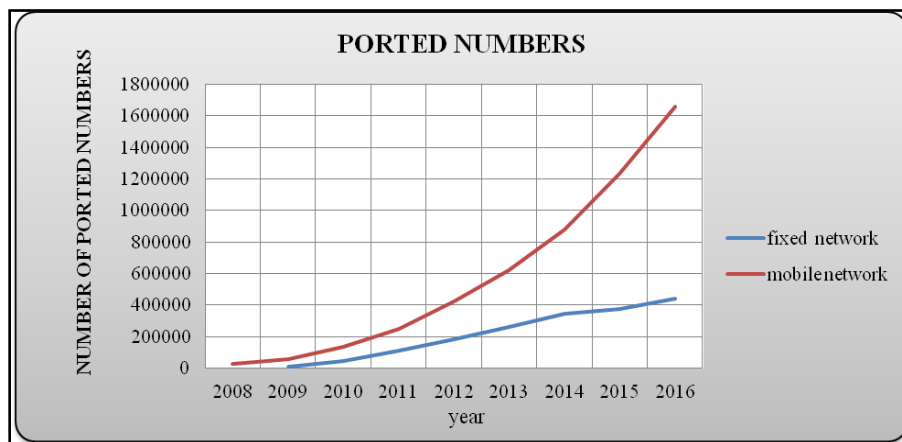


Fig.41

➤ The total number of the ported numbers in the mobile networks for the period 2009 – 2016 was 1 656 147. The number of the ported numbers during the year increased by 18% compared to 2015. The share of the users who have benefited from their right to portability was 14% of the total number of mobile services users.

➤ The total number of the ported numbers in the fixed networks for the period 2009 – 2016 was 440 050. In 2016 the number of the ported numbers decreased by 0.8% compared to the previous year. 16.55% of the total number of end users of fixed phone service benefited from their right to portability.

➤ Regarding non-geographic numbers no high growth of ported numbers was reported – in 2016, 79 numbers in total were ported.

1.2. Regulation and monitoring of the electronic communications services market

The analysis of the competitive environment on the markets of electronic communication networks and/or services and the regulatory measures adopted in order to ensure a competitive environment, are among the main working priorities of the CRC. The activities related to the implementation of these objectives are:

Monitoring of the electronic communications markets

In accordance with Art.40 of the LEC, as well as Art.15 of the Methodology for the terms and procedures of relevant market definition, analysis and assessment⁵ (the Methodology), the monitoring of the Bulgarian electronic communications market is carried out by the CRC through observation of a set of parameters for which data is collected from over 1134 undertakings by means of special-purpose questionnaires, drafted in compliance with the public electronic communications services provided by them. The set of parameters covers information necessary to the Commission for:

- definition, analysis and assessment of the relevant electronic communications market according to the 2009 European Regulatory Framework and the package of regulatory documents containing the main recommendations of the European Commission concerning the application of a harmonised regulatory approach by the national regulatory authorities of the Member States;
- preparation of a summarised annual analysis on the state and development of the electronic communications market in Bulgaria for the previous year, a part of the regulator's Annual Report;
- providing information to the EC related to the preparation of the annual progress reports for the single European electronic communications market aimed at achieving the objectives set out in the Digital Agenda Scoreboard for Europe adopted in May 2010;
- providing information to international institutions and organisations of which CRC is a member by virtue of international agreements: ITU, BEREC, IRG, etc.;
- implementing control over the fulfilment of imposed specific obligations. For the

⁵ http://www.crc.bg/files/_bg/Metodia_2012_DV.pdf (adopted by CRC Decision No. 2076 of 23.10.2012 and prom. SG, issue 89 of 13 November 2012)

purpose of this control CRC analysed the retail market price offers. By its Decisions No. 362/28.06.2016, 403/04.08.2016 and 457/01.09.2016, the regulator established that the analysed price offers correspond to the price limits imposed on the undertaking with significant market power.

Definition, analysis and assessment of relevant electronic communications markets according to the 2009 European Regulatory Framework, as well as imposing specific obligations in the case of undertakings having significant market power on the relevant markets

In accordance with its priorities for 2016, CRC prepared analyses of 9 relevant electronic communications markets and adopted final decisions for existence or absence of effective competition in these markets, as follows:

- third round of analysis of the wholesale market for call termination at a fixed location on individual public telephone networks (market 1 of Recommendation 2014/710/EU⁶);
- third round of analysis of the wholesale market for call termination on individual mobile networks (market 2 of Recommendation 2014/710/EU);
- third round of analysis of the market for voice call origination provided at a fixed location on individual public telephone networks (market 2 of Recommendation 2007/879/EU).

With its final decisions, CRC has concluded that on the wholesale market for call termination there were no opportunities for stimulation and development of effective competition because of which it determined the markets to be susceptible to ex-ante regulation and imposed specific obligations on the undertakings with significant market power. As a part of the obligations imposed, CRC adopted final decisions for determination of cost-oriented prices for call termination on individual public telephone networks provided at a fixed location and voice call termination on individual mobile networks. The termination rates were determined in accordance with Recommendation 2009/396/EC on the basis of costs incurred by an effective operator calculated by BULRIC models. By Decisions No. 550/20.10.2016 and 585/24.11.2016 the termination rates were reduced – these for termination on mobile networks by more than 26%, while those for termination on fixed networks – by nearly 70%.

At the same time, CRC concluded that the market for voice call origination provided at a fixed location on individual public telephone networks was no longer susceptible to ex-ante regulation and withdrew the specific obligations imposed on BTC EAD by Decision No. 1361/31.05.2012.

- second round of analysis of the wholesale market for high-quality access at a fixed location (market 4 of Recommendation 2014/710/EU).

Through the established instruments the CRC has concluded that there was an effective competition on the wholesale market for high-quality access at a fixed location, because of which it withdrew all specific obligations imposed on BTC by CRC's Decision No. 1954/27.09.2012.

- third round for definition, analysis and assessment of the markets for access to public telephone network at a fixed location for residential and business users (market 1 of EC

⁶ Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services

Recommendation 2007/879/EU) and of publicly available national and international telephone services provided to residential and business users at a fixed location (markets 3-6 of Recommendation 2003/311/EU).

On the basis of the effective competition established by the analysis of these markets, the CRC has decided that these markets were no longer susceptible to ex-ante regulation and withdrew the specific obligations imposed on BTC EAD by Decision No. 195/14.03.2013.

Collecting information and monitoring the fulfilment of obligations arising from the Regulation on international roaming

In accordance with the provisions of Regulation (EU) No.531/2012⁷ on the regulation of roaming on public mobile communications networks within the Union (Roaming Regulation), the CRC collected information and carried out monitoring on the fulfilment of the obligations by the undertakings providing international roaming service.

By the Roaming Regulation it was stipulated:

- extension of the obligation to maintain maximum wholesale and retail charges (price caps) for voice calls, short text messages (SMS) and data transfer (mobile Internet). According to the provisions of the amended Regulation, the price caps, in force since 1 July 2014, shall continue to apply in the current period;
- extension of the obligations for transparency, avoidance of inadvertent roaming and “bill shocks”;

At the end of 2016, Commission Implementing Regulation (EU) 2016/2286⁸ was adopted, which is directly connected with the abolition of retail roaming surcharges within the EU Member States as from 15 June 2017. In order to prevent the misuse or unauthorised use of roaming services, the undertakings will be able to carry out Fair Usage Policy (FUP). Commission Implementing Regulation includes also the methodology for assessing the sustainability of “roam –like-at-home” (RLAH).

In 2016 CRC prepared conditions for control and monitoring the implementation of the Roaming Regulation requirements with regard to the transitional period (30.04.2016 – 14.06.2017), in which regulated retail roaming service surcharges were applied, as respectively:

- carried out inspections on the correctness of the surcharges applied by the undertakings and the form of their presentation
- carried out permanent monitoring of the undertakings’ offers and their communications with the users through all communication channels, collecting and summarizing the data on transparency and comparability of their retail roaming services
- published information for the users on the CRC website in order to get them acquainted with the operative regulations during the transitional period
- took part in the preparation of BEREC opinion on the EC proposal for

⁷ Regulation (EU) No. 531/2012 of the European Parliament and the Council of 13 June 2012 on roaming on public mobile communications networks within the Union, amended by Regulation 2015/ 2120 of 25 November 2015.

⁸ Commission Implementing Regulation (EU) 2016/2286 of 15 December 2016 laying down detailed rules on the application of fair use policy and on the methodology for assessing the sustainability of the abolition of retail roaming surcharges and on application to be submitted by a roaming provider for the purposes of that assessment

Commission Implementing Regulation regarding fair use policy and methodology for assessing the sustainability of the abolition of retail roaming surcharges.

With a view to the above, it has been established that undertakings providing public electronic communications services through mobile networks:

- ✓ charge the subscribers according to the tariff plan, offer special tariffs and roaming services packages;
- ✓ implement the provisions for transparency, avoidance of inadvertent roaming and “bill shocks” in accordance with the Regulation requirements;
- ✓ apply charges in accordance with the price caps for regulated wholesale and retail roaming services determined by the Regulation.

Cooperating with the Commission for Protection of Competition

In accordance with the Rules for interaction and coordination adopted in 2008, which aim to establish conditions for effective cooperation and coordination between both institutions when exercising their legally delegated powers and implementing national and European electronic communications and competition law, the Commission for Protection of Competition (CPC) and CRC have continued their active cooperation.

In 2016 CRC assisted CPC in carrying out investigations on files concerning potential breaches of the Law on Protection of Competition (LPC) by undertakings providing electronic communications services.

For its part, the CPC has presented its opinions on the draft decisions of CRC concerning market analyses carried out in 2016.

1.3. Development and technical support of the National Radio Frequency Spectrum Monitoring System

Research of the opportunities for expansion and updating the National Radio Frequency Spectrum Monitoring System (NMS), as well as the activities related to technical support and preventive maintenance of the equipment used were the highlights in 2016.

With the purpose of efficiency enhancement updating of the used dedicated software for radio spectrum monitoring started for the part of NMS stations.

Regarding technical and technological support of the activities for electronic communication networks control and monitoring, the following activities were fulfilled in 2016:

- study of the European experience concerning technological hardware and software equipment for control and monitoring of new networks and technologies;
- technical support of dedicated technological equipment: fixed, mobile and transportable monitoring stations, portable measurement equipment and NMS communication networks (configuration, set up and administration).

For the implementation of its control functions, at the end of 2016 CRC has been operating the following measurement systems:

- 15 fixed stations for radio frequency spectrum (RFS) monitoring (1 manned and 14

unmanned Remote Measurement Stations (RMS) in the bands of 20 to 3000 MHz;

- 8 mobile stations for RFS monitoring;
- Dedicated mobile station for GSM 900/1800 and DVB-T;
- Transportable system for measurement of the coverage and quality of the services provided by GSM/UMTS networks;
- Transportable system for measurement of the coverage and quality of the services provided by GSM/UMTS/LTE networks;
- 7 transportable measurement systems for DVB-T networks coverage and quality;
- 7 transportable measurement systems in the bands from 9 kHz to 26.5 GHz;
- 7 portable measurement systems in the bands from 9 kHz to 20 GHz;
- 7 transportable measurement systems in the bands from 9 kHz to 3 GHz.

1.4. International activity of the CRC in 2016

2016 was a year of intensive international activity for the CRC, which continued its active participation in the work of specialized international and European organisations, and thus contributed to the development and better functioning of the internal market of electronic communication networks and services.

Participation in the work of European structures

In 2016 the Commission continued its active participation in the work of IRG and BEREC at the Heads of NRAs level as well as at the expert level.

CRC was presented in the four regular meetings of the General Assembly of IRG and Plenary meetings of BoR of BEREC and MC of BEREC Office, held during the year respectively in February in Rotterdam, The Netherlands, in June in Vienna, Austria, in October in Vilnius, Lithuania, and in December in Berlin, Germany, and in the extraordinary Plenary meeting of BoR of BEREC held in August in Brussels, Belgium, as well as of the expert level in the four meetings of the BEREC Contact Network, held in February in Krakov, Poland, in May in Budapest, Hungary, in September in Limassol, Cyprus, in November in Jurmala, Latvia.

CRC took part in the daily work of the BEREC Expert Working Groups (EWGs) for 2016, related to the preparation of important documents, such as "Guidelines on the implementation of the Roaming Regulation, amended by Regulation (EU) No.2015/2120", "BEREC Guidelines on the implementation by national regulators of European Net Neutrality Rules", BEREC's contribution to the EC regarding OTT services, BEREC's high-level opinion on the EC's proposals for review of the Electronic Communications Regulatory Framework, etc.

CRC was presented by its experts in several workshops in Brussels, namely: in a BEREC's workshop organized by EWG "Next Generation Networks" on "regulatory implications of SDN and NFV", which was held in January, in IRG's workshop in June "Layer 2 Wholesale Access Products and the main challenges", in a BEREC's workshop in November in connection with a meeting of the Radio Spectrum Policy Group (RSPG) to the EC, as well as in

a BEREC – EMERG joint workshop on International Roaming and Regulation of Voice in December 2016.

In 2016 in Brussels continued the BEREC's training for the period 2015-2016 on the Regulatory framework for electronic communications, in which a CRC representative took part, as the second, third and fourth sessions were held in February, March and April respectively. In November 2016 the first module from the second BEREC's training for the period 2016-2017 started, again with the participation of a representative of the CRC.

CRC's experts took part in two working meetings in connection with the transposition in the national legislations of Art.13a of the Framework Directive⁹ on security and integrity of networks and services (transposed in Bulgarian legislation with Art. 243 of the LEC) – in March in Budapest, Hungary and in November in Prague, Czech Republic.

In November 2016 in Rome, Italy was held the 7th meeting of the European Union Agency for Network and Information Security (ENISA) on the implementation of Art. 19 of Regulation (EU) No. 910/2014 on electronic identification and trust services for electronic transactions in the internal market.

Communication with the European Commission (EC)

In 2016 CRC continued its active dialogue with the EC. On 28.01.2016 in Brussels was held an EC's workshop on assessing the costs for wholesale roaming services provision within EEA in implementation of Regulation (EU) No. 2015/2120 with participation of experts from NRAs of the EU Member States, including CRC, independent experts, as well as representatives of a large number of European operators.

In November 2016 was held the regular annual mission of representatives of the EC Directorate General "Communications Networks, Content & Technology", related to the preparation of the regular report for the progress in development of the electronic communications market in the Republic of Bulgaria in 2015.

Participation in the activity of specialised international organisations

In 2016 CRC intensified its attendance and active positions in forums organised by ITU, UPU, CEPT, ETSI, etc.

International Telecommunication Union (ITU)

The key event organised by the ITU, in which the CRC was represented at the highest level, in accordance with its competences, was the World Telecommunication Standardization Assembly (WTSA-16) and the Global Standards Symposium (GSS-16) at the end of October and

⁹Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/21/EC on a common regulatory framework for electronic communication networks and services, 2002/19/EC on access to, and interconnection of, electronic communication networks and associated facilities, and 2002/20/EC on the authorisation of electronic communication networks and services

the beginning of November 2016 in Yasmine Hammamet, Tunis. The World Assembly which is held every four years, determined the tasks of ITU Telecommunication Standardization Sector (ITU-T) for the next research period

Another large-scale world event, organised annually by ITU, in which CRC took part at the highest level was the world exhibition ITU Telecom World 2016 in Bangkok, Thailand, in November 2016.

CRC's experts took part in ITU's World Radiocommunications Seminar in December 2016 in Geneva, Switzerland. This seminar takes place every two years and deals with the management and use of the radio-frequency spectrum by different radio services.

In 2016 the CRC took part with its representatives in significant regional events, organized by ITU, including:

- Regional Workshop for Europe and CIS on Spectrum Management and Transition to Digital Terrestrial Television Broadcasting, 21-23.03.2016, Bucharest, Romania;
- ITU-EC Regional Conference for Europe on Broadband Services and Infrastructure Mapping, organized in partnership with the Office of Electronic Communications of Republic of Poland (UKE), 11-12.04.2016, Warsaw, Poland;
- Regional Conference on Regulation of Electronic communications market and ITU Regional Development Forum for Europe, 26-28.09.2016, Budva, Montenegro held in parallel with Regional Festival of Information Technology Achievements - INFOFEST 2016.
- ITU Regional Workshop for CIS and Georgia on Trends in Converged Networks: Post-NGN, 4G and 5G solutions, 17-18.11.2016, Kyiv, Ukraine;
- ITU-ENISA Regional Cybersecurity Forum for Europe, in collaboration with the Ministry of Transport, Information technology and Communications of the Republic of Bulgaria, 29-30.11.2016, Sofia, Bulgaria.

Universal Postal Union (UPU)

CRC participated, in accordance with its competences, in the 26th Congress of the Universal Postal Union (UPU), held at the end of September and beginning of October in Istanbul, Turkey. During the congress, Bulgaria was re-elected in the managing body of the Universal Postal Union – the Council of Administration, for the period 2016-2020.

Network of regulators of the Member States of the International Organisation of La Francophonie (FRATEL)

In its capacity of co-founder and full member of FRATEL since its establishment, CRC participated in the 14th annual meeting of the network, which took place on 01 and 02.12.2016 in Luxembourg, Luxembourg.

European Conference of Postal and Telecommunications Administrations (CEPT)

CRC's representatives participated in the activity of the working structures to CEPT:

– CEPT Workshop on Machine-to-Machine Communications (M2M), organised by the Electronic Communications Committee (ECC, in cooperation with The Federal Network Agency (Bundesnetzagentur), 21-22.03.2016 Mainz, Germany;

– Meetings of Project team PT 22 on monitoring to the ECC's Working Group Frequency Management (WG FM) -CEPT/ECC/WG FM/PT 22, 12-15.04.2016 in Budapest, Hungary and 03-06.10.2016 in Copenhagen, Denmark.

– Meeting of the Committee on ITU Policy (Com-ITU) to CEPT, 06-09.09.2016 in Copenhagen, Denmark, which adopted the second set of European Common Proposals for WTSA-16;

– Meeting of the Project team - Technical Regulation & Interconnection Standard – (PT TRIS) of the Working Group Numbering and Networks (WG NaN), to CEPT/ECC, 11-13.10.2016 in Bucharest, Romania;

– Meeting of the Working Group Frequency Management to ECC – CEPT/ECC/WG FM, 17-21.10.2016 in Bordeaux, France;

– Meeting of the Working Group Numbering and Networks to ECC - CEPT/ECC/WG NaN, 22-24.11.2016 in Brussels, Belgium.

European Telecommunications Standards Institute (ETSI)

CRC participated in ETSI General Assembly and the working meeting of ETSI National Standards Organizations, 28-30.11.2016 in Sofia-Antipolis, France.

Bilateral and regional cooperation and other significant international events

In 2016 CRC continued the tradition of developing and deepening the bilateral cooperation both on the basis of bilateral agreements with our neighbouring countries and in by participation in large-scale events on regional basis. CRC participated in a bilateral working meeting with the Agency for Electronic Communications of the Republic of Macedonia (AEK), held on 29-30 March 2016 in Skopje, Macedonia. The meeting aimed at studying the Macedonian Regulator experience on the equipment used for spectrum monitoring of TCI- SPX CORPORATION.

During the 10th ERGP Plenary meeting held on 01.07.2016 in Bulgaria, at the initiative of CRC, a Memorandum of Understanding between the CRC and the NRA of Romania – ANCOM was signed.

CRC representatives at high and expert level participated in other significant events on the regional basis, among which:

– The second, third and fourth meetings of the South Digital Dividend Implementation Forum (*SEDDIF*), which were held in February in Zagreb, Croatia and in June and November in Budapest, Hungary, respectively.

– Conference Digital Economy: Opportunities and Challenges, 17-18 March 2016, Prague, Czech Republic;

- Regional Workshop for Europe and CIS on Spectrum Management and Transition to Digital Terrestrial Television Broadcasting, 21-23 March 2016, Bucharest, Romania;
- First meeting of Black Sea region countries on re-planning of Plan Geneva’06 frequency assignments in the 470-694 MHz band, 27-29 July 2016, Kyiv, Ukraine.
- Conference organized by the Romanian regulator ANCOM on its 25th anniversary and 150 years of its membership in the ITU Council, 26 September 2016 in Bucharest, Romania.
- Workshop and presentation of Anite Nemo Ltd project, organized by the Creek regulator EETT, 07-08 November 2016, Athens, Greece.

CRC’s international activity during the year both at high and expert level, contributed to improving the effectiveness of the Commission’s work with the implementation of the best regulatory practices, taking into account trends and ongoing development processes on the international and single European internal market in order to protect the national interests with a view to specificities of the Bulgarian electronic communications market.

1.5. CRC’s Administrative capacity

1.5.1. Human resources

Establishment and maintenance of grounded, practice-oriented and feasible Human Resources Management Policy is an important part of the functioning of the Communications Regulation Commission. In this connection, setting of strategic human resources objectives and outlining the means for their achievement take into account both current legal framework and the possibilities for their realization.

In 2016, CRC performed its functions with the following distribution of the employees: (Fig. 42)

• Internal Audit Unit	1
• Positions directly subordinated to the CRC Chairman	1
• Coordination, Planning and International Relations Directorate	11
• Legal Regulation and General Legal Services Directorate	21
• General Directorate Communications Control	63
• Authorization and Frequency Planning Directorate	29
• Technical Regulation and Electronic Signature Directorate	12
• Market Regulation Directorate	21
• Financial and Administrative Services Directorate	38

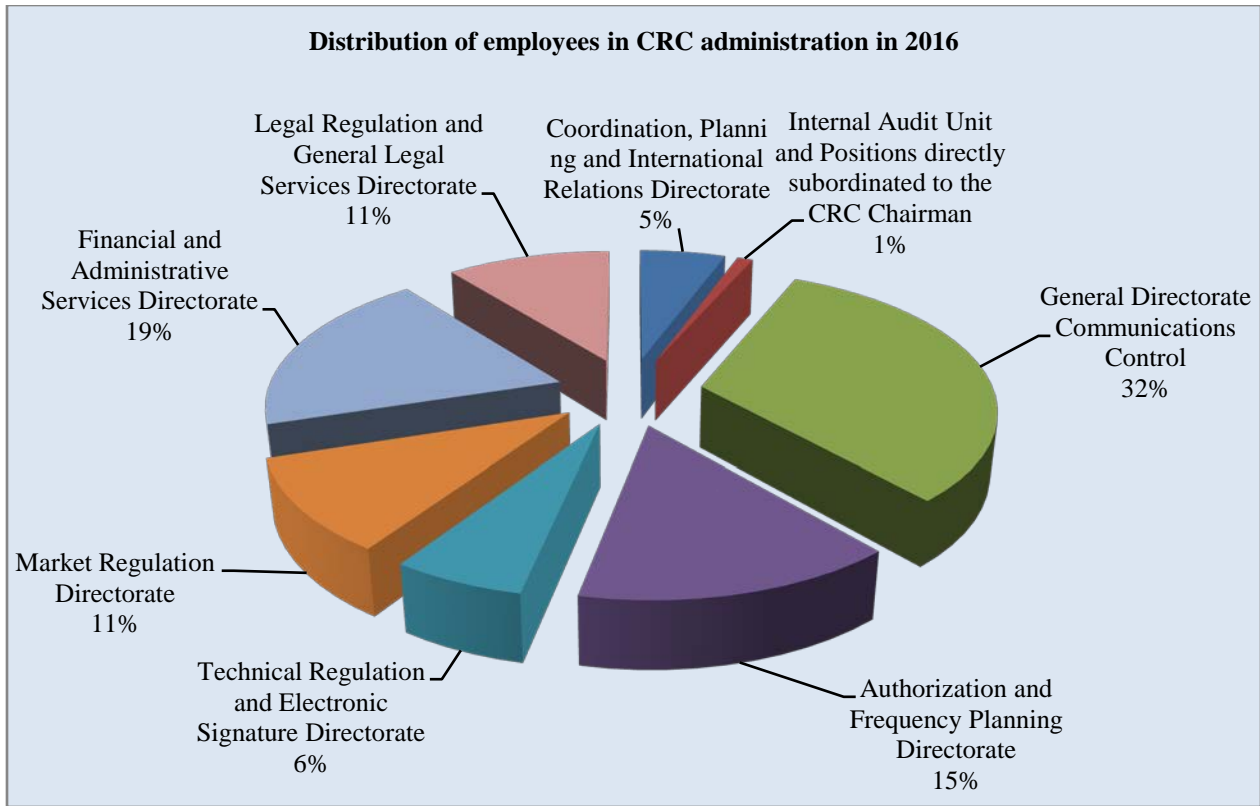


Fig. 42

The total number of the CRC staff is 255 positions. The employed civil servants are 180, 17 are under employment contract and 5 people are the collegial body members.

The predominant part of the staff is in the age category of 30 to 59 years including. Of the total number of employees in the CRC, 190 have higher education and 160 of them have master's degree (Fig. 43).

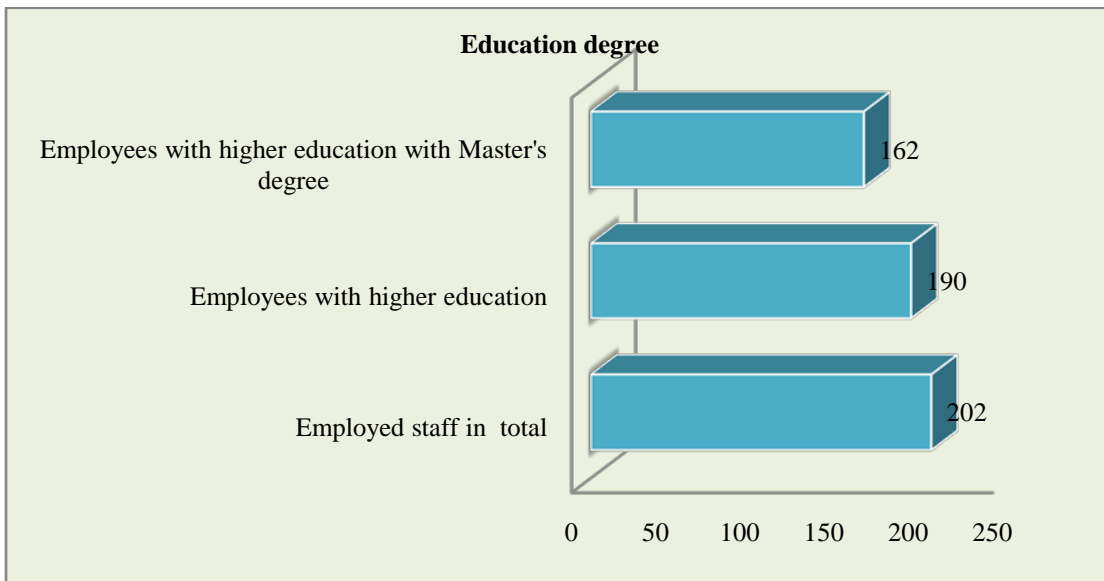


Fig. 43

The allocation of employees according to their education is in the following areas – technical sciences; legal sciences; economic sciences; humanitarian sciences and others (Fig. 44)

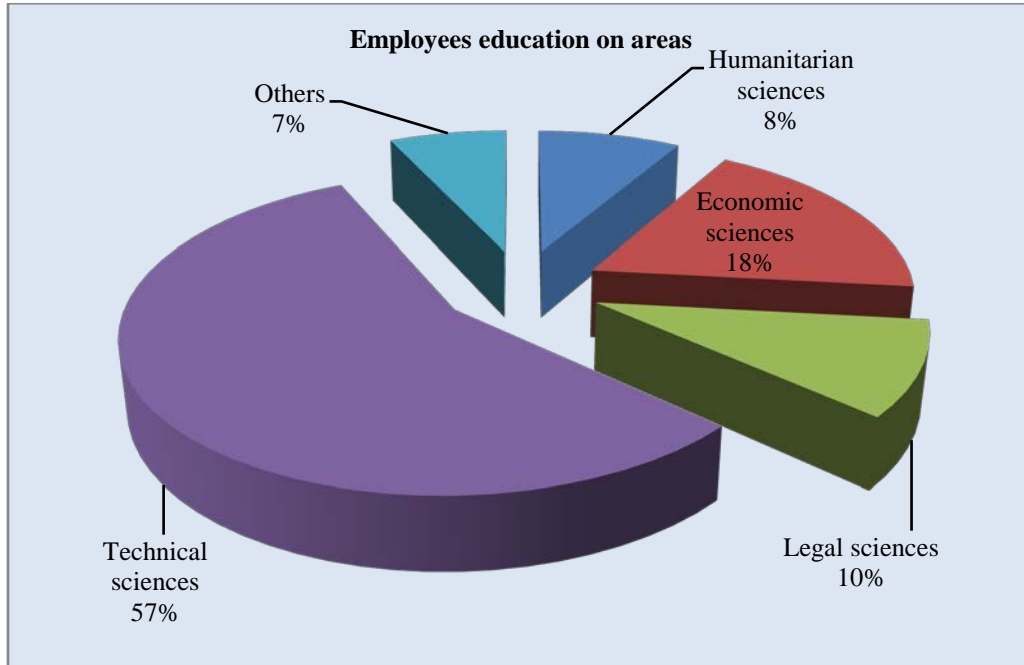


Fig. 44

Recruiting of employees for the CRC's administration is according to the Law on Civil Servants, the Ordinance on Recruitment Procedures for Civil Servants and the Internal Rules.

In 2016 according to the regulatory requirements, at the CRC are organised and conducted 18 competition procedures, and as a result, 18 new employees were appointed until the end of the year. Employees leaving the CRC for the same period were 16.

In order to better planning and selection of human resources, Methodology for identification of key positions and Methodology for continuity, interoperability and career development in the administration of the CRC were developed and adopted. The implementation of the two methodologies provided more opportunities for motivating the employees to continue their career in the Commission and improved the work continuity.

In order to maintain up-to-date knowledge and acquire new knowledge, the employees of CRC participated in trainings conducted by external organisations and in specialized trainings conducted by the Institute of Public Administration.

In 2016 the courses and workshops, as well as the number of participants involved are as follows: (Fig. 45)

- Managerial skills

- Information technologies 4
- Specialised training 70

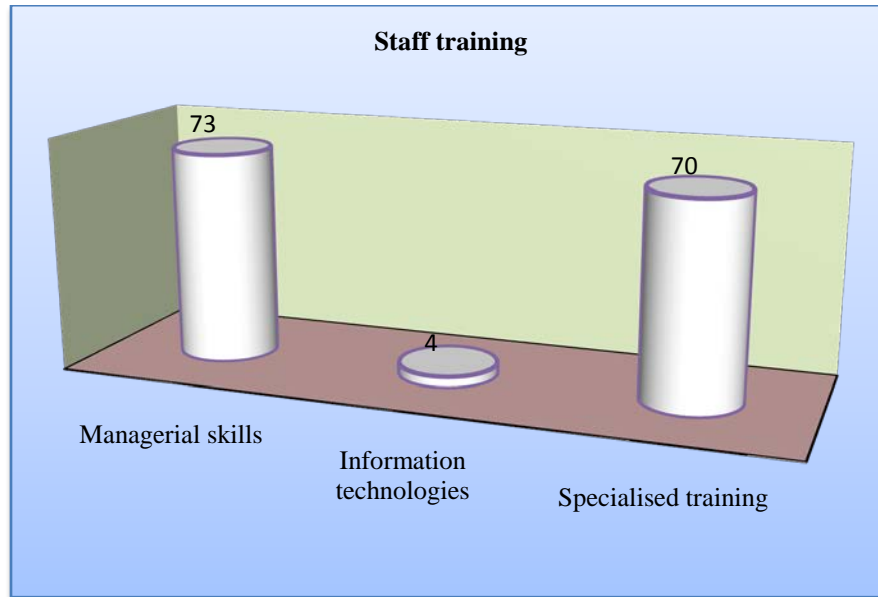


Fig.45

The effect of the trainings and benefit for the CRC are evaluated periodically in the process of the work in order to improve their effectiveness and efficiency.

1.5.2. Information services

In 2016 CRC continued its work on building its internal and external information systems with a view to increase the quality of work of its administrative employees, to facilitate the access of the citizens and the business to information and provision of electronic administrative services. The activities related to the Commission's participation in e-government projects in the Republic of Bulgaria are as follows:

➤ Maintenance and operation of the information system "Licensing and Registers" providing 39 electronic administrative services to citizens and business. The information system was designed by the Operational programme "Administrative capacity" financed and certified under the Ordinance on the General requirements for operational compatibility and information security. Information system "Licensing and Registers" supports the management of the IT processes in maintaining the Commission's electronic registers and allowing public access via the Internet according to the requirements of the LEC, LEDES, and the Postal Services Act (PSA). The system is connected with document turnover system EVENTIS in terms of receiving incoming numbers of documents received through "Licensing and Registers", issuing resolutions, etc.

➤ Exploitation of a Documentary Portal to the document turnover system EVENTIS, which enables citizens and business to send electronically signed documents and receive electronic statements by CRC.

➤ Creation of an organizational, communication and information environment for both effective and transparent functioning of the CRC’s administration, which shall be in compliance with the government strategy of electronic management in the Republic of Bulgaria for the period 2014-2020.

The implementation of these activities will contribute to reducing the costs, improving the quality of the services offered and improving the transparency of CRC’s work.

➤ In fulfilment of the CRC priorities, IT Services and Technologies Department started a procedure on introduction of Information security management system (ISMS) according to the international standard ISO 27001.

➤ At the end of 2016 started work on renewal and development of CRC website and internal content management system. The new website design will facilitate the user’s access and usage by devices with different screen resolution.

2. Other important activities

2.1 Standardization

CRC performs the functions of the National Standardisation Organisation (NSO) for the European Telecommunications Standards Institute (ETSI). The Commission takes an active part in the work of the Technical Committees (TC) for Standardisation (TC 47, TC 57, TC 75, TC 80) of the Bulgarian Institute for Standardization (BDS), having relation to electronic communications.

In 2016 CRC participated in the ETSI procedures as follows:

Table 12

2016	Number of processed documents	Number of procedures
Vote (TAP) – Voting (two-step procedure)	53	20
ENAP – One-step procedure	146	53
MV – Member voting	25	16
Withdrawal	3	1
PUB – All weekly received documents	2763	

CRC notified ETSI electronically for the national EN standards published by BDS introducing the relevant ETSI EN standards.

In the past year 132 ETSI EN standards were introduced by endorsement as Bulgarian standards and 4 ETSI standardization documents, 2 standards were withdrawn. With the participation of CRC TC experts, 8 titles of EN standards were corrected in BDS Official Bulletin.

The translation of the titles of draft ETSI harmonised standards have been prepared and agreed on time by correspondence at TC of BDS.

By publishing draft standards and standardisation documents of ETSI on the different procedures on its website, CRC provides opportunity for all concerned parties to give their opinions and comments. In implementation of Regulation (EU) 2012/2120, the Commission provides ETSI with an annual report on standardisation activities. CRC's representative participated in the 68th ETSI General Assembly and the meeting of ETSI National Standards Organizations.

2.2. Radio equipment and electronic communication terminal equipment

In the past year, in compliance with Art.269 of the LEC, CRC received through the European portal OSN (One Stop Notification) for electronic services and timely stored and reviewed 362 notifications for radio equipment which would be placed on the market. After analysing the received notifications CRC sent 113 letters by which the applicants were informed about the inability of radio equipment to be put into service on the territory of the Republic of Bulgaria or the ability of particular radio equipment to be put into service observing the conditions and the relevant technical parameters specified in the Bulgarian regulations.

The following chart shows the number of received notifications and the number of letters sent by CRC for the period from the creation of the European OSN portal in 2008 until the end of 2016.

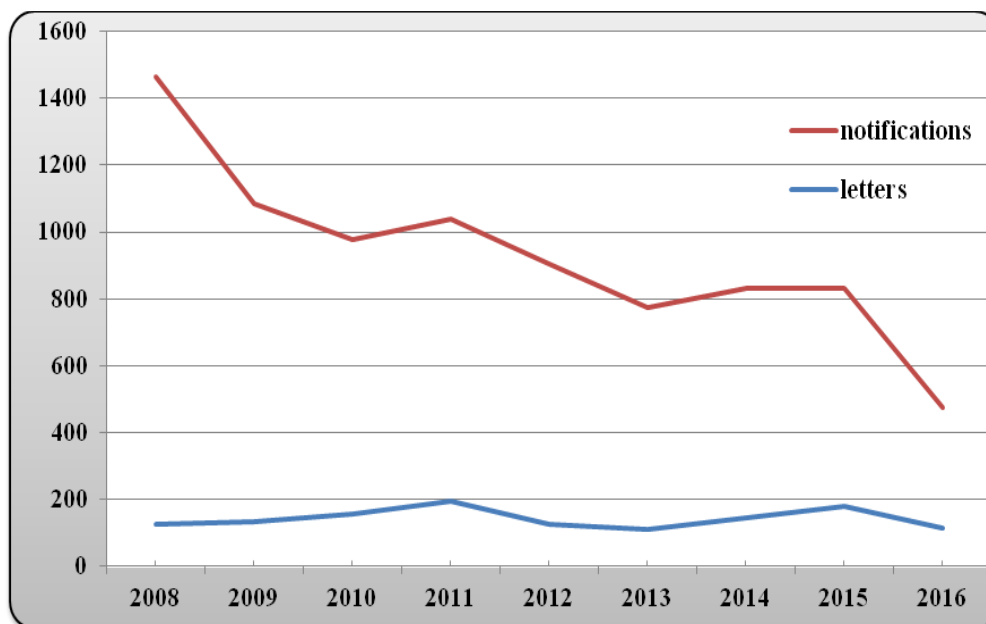


Fig.46

2.3. Performance of obligations related to Chapter 15 of the LEC

In 2016 CRC received five notifications about incidents that have had a significant impact on networks and services functioning, which met the criteria in the “General requirements for carrying out public electronic communications”. Three incidents occurred as a result of heavy snowfalls when a part of base stations remained without external power supply

which resulted in interruption of mobile services in a number of settlements. According to data submitted by the undertakings, less than 30 000 subscribers were affected for each of these incidents and the services were restored within one day. Two incidents occurred as a result of technical and software failures, when the subscribers were without telephone services or with poor quality services for a period from three to five hours. On the basis of received notifications and in implementation of its obligations under Art.243b, Para.5 of the LEC, CRC prepared and sent an annual report to the European Commission and ENISA.

In 2016 ENISA made an analysis of security measures deployed by e-communication providers. Seven Bulgarian undertakings took part in the analysis. As a result, “Technical Guideline on Security Measures“, was prepared and published on ENISA website¹⁰. It includes a list of security measures that the undertakings should take.

2.4. Electronic signature

The rapid development of the information technologies and provision of reliable and secure certification services makes the exchange of electronic documents and electronic communications a preferred way of communications in different public spheres of life. Qualified electronic signature (QES) has been established as the secure and reliable means of certification the user’s identity in online environment when signing bank transactions, electronic documents, contracts, e-mails, etc. For this reason and as a result of an increase in the number of affordable electronic services for citizens and business, in 2016 the trend of QES usage continued at national level.

Fig. 47 and Fig.48 present a summary of certification services provided by Trust Service Providers (TSPs) for 2016, meeting the requirements of the Law for the Electronic Document and Electronic Signature (LEDES).

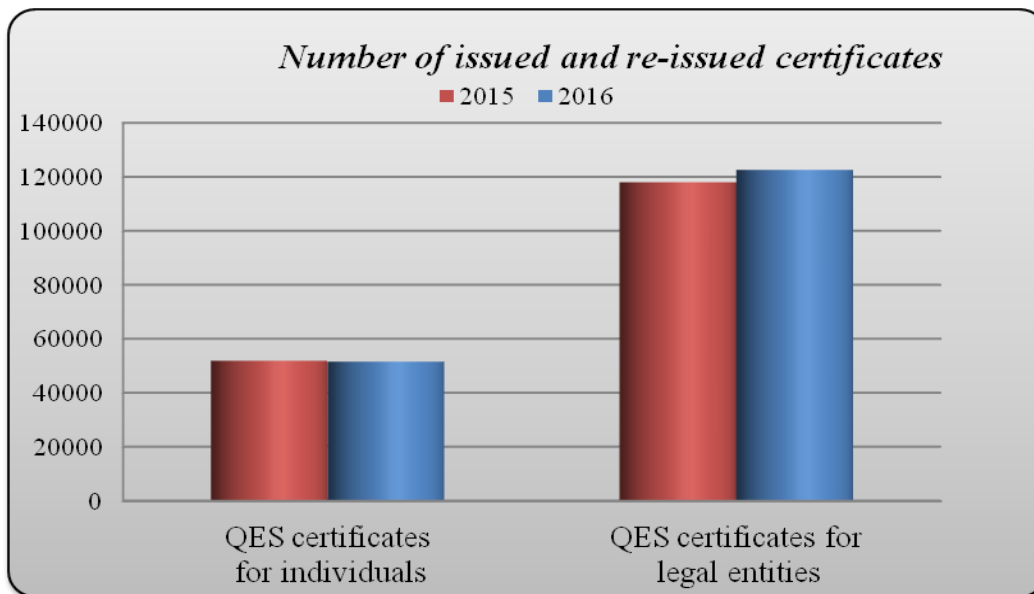


Fig. 47

¹⁰ <https://www.enisa.europa.eu/news/enisa-news/analysis-of-security-measures-deployed-by-e-communication-providers>

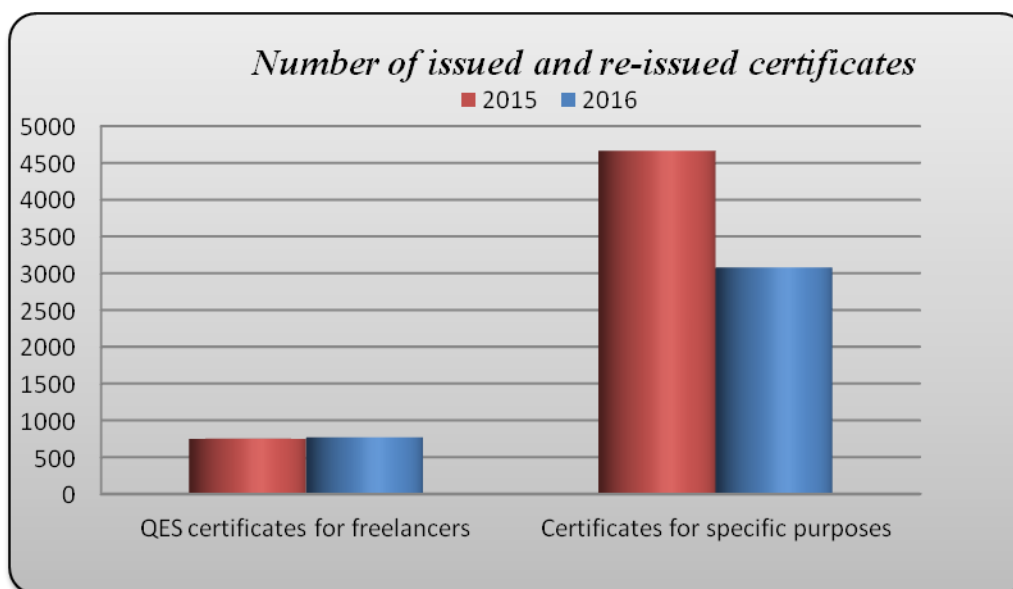


Fig. 48

Data comparison between 2015 and 2016 shows retention of the number of QES issued and re-issued certificates for individuals and minimum increase by 4 % for QES certificates for legal entities (Fig. 47). For QES certificates for freelancers a slight increase by 3 % was observed compared to the previous year, while the number of issued and re-issued certificates for specific purposes reported a decrease by 34 % (Fig. 48).

In 2016 a new provider “Evrotrust Technologies” JSC appeared in the sector of the certification services on the Bulgarian market, which after inspection by CRC was registered in the Register of the Trust Service Providers, issued certificates for Qualified electronic signature (QES). In accordance with the requirements of Art.44 of Ordinance for the activity of certification service providers, the procedure for its termination and the requirements for the provision of trusted list certification documents,”Spektar“ AD notified CRC for its intention to transfer its business to the new provider. In pursuance of its monitoring functions set by LEDES, the Commission supervised the procedure of the transfer of activity between the providers, as well as accomplished 4 planned inspections of the activities of: “Infonotary” EAD,”Information Service“AD, “Borica-Bankservice” AD and ”Spektar“ AD. The inspections covered the compliance with measures to guarantee safety and secure continuity of the provider’s activity. No significant defaults were established as a result of the inspections.

Since 1 July 2016 the Member States should apply Regulation (EU) 910/2014 of the European Parliament and of the Council on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (the Regulation). The Regulation aimed to ensure the proper functioning of the internal market and at the same time to achieve an appropriate level of security of electronic identification and authentication services. In view of implementation of the Regulation, the Ministry of Transport, Information Technology and Communications submitted to the National Assembly a draft Law on amendment and supplement of the Law for the Electronic Document and Electronic Signature (LAS of LEDES), in which the CRC was referred to as: a supervisory body and the authority

responsible for the establishment, maintenance and publication of the national trust list. The LAS of LEDES has not been adopted by the National Assembly yet. Nevertheless, the Certificate Services Providers (CSP) is gradually preparing their technology systems for transition to the new Regulation's requirements. As a result, at the end of 2016 the issued QES qualified certificates that met the Regulation's requirements were about 80 and the issued qualified certificates for qualified (advanced) electronic signature – approximately 70.

2.5. Communications control

CRC exercises effective control regarding compliance with LEC and secondary legislation requirements in the area of electronic communications, the provision of postal services under the PSA, the activities on certification services provision related to the electronic signature according to the LEDES. CRC control functions throughout the country are performed by built territorial structure – a main unit in Sofia and five regional units in the towns of Plovdiv, Burgas, Varna, Velico Tarnovo, and Vratsa.

Recently, including in 2016, by its control activity CRC has devoted a main place to observe the LEC requirements regarding protection of the end users in compliance with principles of the law, non-discrimination and transparency.

2.5.1. Monitoring and control of the radio frequency spectrum for civil need

The introduction of the new technologies and the continued improvement of electronic communications require the availability of sufficient free RFS, which is crucial for the competition development in the sector. In this respect, the significant role of monitoring and control in regarding effective RFS management and the need to provide up-to-date data for RFS availability strengthens more and more. The establishment of conditions for the normal operation of the constructed radio networks without any harmful interference is possible only by constant monitoring and control. On the other hand, the constant monitoring contributes to the timely localisation and elimination of sources of radio interference and identification of illegal broadcasting equipment.

The increasing number of users of services provided by using RFS also requires strengthening of the role of monitoring for the efficient management of the spectrum as a national scarce recourse.

CRC performs its main activities of monitoring and control of RFS by the established NMS. Periodic preventive control was carried out through fixed and mobile stations for radio monitoring throughout the country to ensure non-discriminatory treatment of the lawful spectrum users and to guarantee a certain quality of the electronic communications services provided to the end users. In 2016 as well, particular attention was given to the monitoring of the VHF frequency ranges for radio and television broadcasting for the assessment of the electromagnetic environment and cross-border interferences.

In 2016 main RFS monitoring and control activities were as follows:

- Protection of the interests of end users by establishing conditions for normal work of legitimate spectrum users and ensuring a certain quality of the electronic communications

services provided to the end users, as well as avoiding interfering and illegal broadcasting through exercising preventive and following control.

In 2016, as a result of the ongoing regular planned monitoring, the undertakings were sent electronically data from 14379 measurements made of basic technical parameters of radio broadcasting stations. The steady trend of maintaining the parameters of broadcast radio signals according to the standards and reducing the side and intermodulation emissions generated, including in the scope of the aeronautical service, continued. As a result of the preventive control of the radio frequency spectrum, 8 prescriptions (about 20% less than 2015) for deviations of technical parameters were given, which had to be remedied within one month. In connection of the given instructions 11 control inspections were carried out and it was ascertained that the undertakings had taken the necessary measures for bringing the broadcasting stations in compliance.

- Control regarding conformity with the rules for the use of radio frequencies and radio frequency bands for civil needs.

In implementing the policy for management of the radio frequency spectrum and the conditions of the issued authorisations, a scheduled daily monitoring was carried out in the 20-3000 MHz frequency band through fixed (manned and unmanned) stations for radio monitoring by NMS, and through mobile stations for radio monitoring – periodic control and monitoring throughout the country.

- Monitoring and control of the conformity of the established broadcasting stations for analogue terrestrial broadcasting of radio signals and digital terrestrial broadcasting of television signals with the approved technical characteristics.

30 measurements of basic technical parameters of broadcasting stations were carried out in fulfilment of CRC decisions to verify their compliance with the approved technical specifications. In connection with the identified inconsistencies, 2 prescriptions for bringing in compliance of the broadcasting stations were given. The prescriptions were fulfilled within the set deadline.

- Monitoring for evaluation of the electromagnetic environment:
 - Monitoring of VHF frequency ranges for radio and television broadcasting for evaluation of the electromagnetic environment and cross-border interferences.

In border country areas, annual measurements are conducted in order to assess penetration of signals from neighbouring countries and analysis of the radio-frequency protection ratio between the EMF intensity of broadcasting transmission stations (according to Rec. ITU-R BS. 412): the measurements on the territory of 53 settlements to assess the electromagnetic environment and cross-border interferences from the territory of Turkey, Serbia, Romania, Ukraine, Russia, Macedonia and Greece were summarised and analysed. The results were objectified in 697 measurement reports.

Traditionally, special attention during the summer months was paid to the evaluation of the electromagnetic environment and cross-border interferences on the Bulgarian Black Sea coast. Regular measurements were conducted in 7 settlements on the Bulgarian Black Sea coast. Once again was ascertained that during the summer period the penetration of cross-border transmissions along the Black Sea coast is affected too much by ambient temperature, sea water

temperature and sea condition. As a result of actions undertaken during past years, no interference to Bulgarian broadcasting stations has been registered in their areas of service and relatively lower levels of cross-border signals received from Turkish broadcasting stations were registered.

Annual measurements on the territory of different settlements in the country are conducted to assess the electromagnetic environment and for the purpose of the spectrum management. A study was conducted in 31 settlements and at certain points of the Hemus motorway, Trakia motorway and Ljulin motorway.

- monitoring of frequency ranges intended mobile PMR networks:

For evaluation the actual availability of RFS and registering illegal radio broadcasting in PMR network ranges on the territory of the country through fixed (manned and unmanned) radio monitoring stations of NMS, monitoring was conducting on the territory of: Sofia city (Sofia fixed station), Brystovets village (Remote Measurement Station – RMS Brystovets), Botevo village (RMS Botevo), Plovdiv city (RMS Plovdiv), Chernogorovo village (RMS Chernogorovo), Vidin town (RMS Vidin), Vratsa town (RMS Vratsa), Blagoevgrad town (RMS Blagoevgrad), Stalevo village (RMS Stalevo), Todorovo village (RMS Pleven), Varna town (RMS Varna), Radingrad village (RMS Razgrad), Ledenik village (RMS Ledenik), Montana town, Asenovgrad town, Botevgrad town, Gabrovo town, Dobrich town, Dupnitsa town, Kozloduy town, Kardjali town, Kjustendil town, Lovech town, Silistra town, Pernik town, Smoljan town, Stara zagora town, Haskovo town, Shumen town, and Yambol town. The results of the measurements conducted were summarized in 224 measurement reports.

- evaluation of the electromagnetic compatibility of VHF-FM radio broadcasting stations in the 87.5-108.0 MHz bands and the radio navigation and communication equipment of the aeronautical services operating in the 109÷137 MHz frequency band.

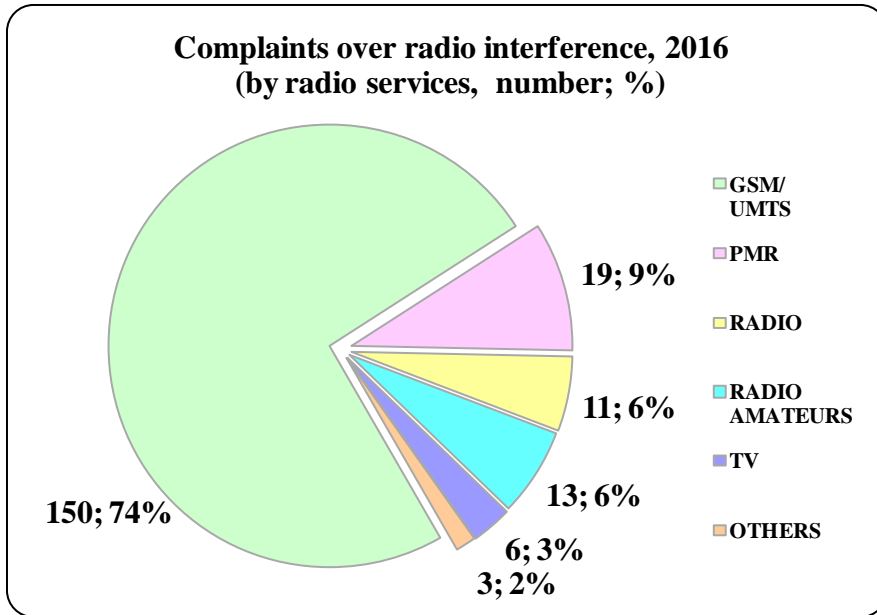
In 2016, measurements were carried out of 5 radio broadcasting stations: RBS Medjid Tabia (Silistra town), RTVS Shumen (Shumen town), RTVS Stramni rid (Kardjali town), RTVS Arbanasi (Veliko Tarnovo town) and RTVS Trestenik (Razlog town) in order to guarantee the electromagnetic compatibility and trouble-free operation of the radio navigation and communication equipment of the aeronautical services; the measurement were carried out according to the Methodology for measuring intermodulation products of type "A1", occurring during the operation of closely located VHF radio broadcasting stations (according to item 2.5 of Appendix 1 to the Technical requirements for operation of the electronic communication networks of the Radio broadcasting service and the relevant equipment).

- Monitoring and control over the quality of provided services with a view to the protection of public and consumer interest:

- monitoring related to received complaints from legitimate spectrum users, citizens, organisations and institutions.

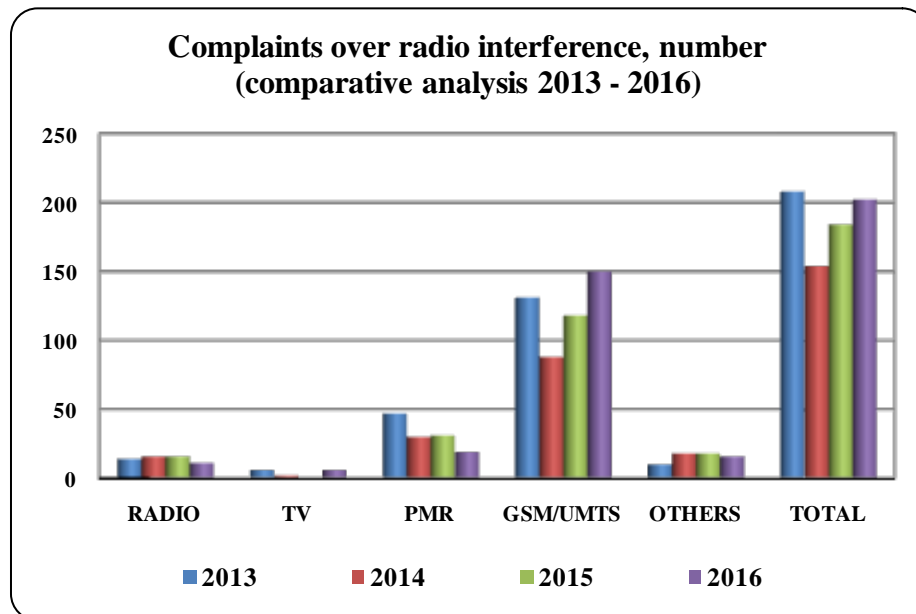
In 2016, 184 cases of radio interference were examined (Fig. 49), and 269 measurement reports were drawn up on the results. For quick localisation and elimination of interfering sources, the necessary measures were timely undertaken. In 2016, interferences from radio frequency jammers transmitting in frequency ranges intended for electronic communications through mobile terrestrial networks had a relatively high share. Next place was for cases of registered interferences from defective equipment in the frequency ranges intended for electronic

communications through mobile terrestrial networks. In 2016 continued radio interferences resulting from electromagnetic incompatibility and mutual interferences as a result of the shared use of different technology in bands designated for the operation of mobile terrestrial radio networks. Fig. 50 shows a comparative analysis of radio interference cases solved in relation to complaints received by type of radio services for the period 2013-2016.



Source: CRC

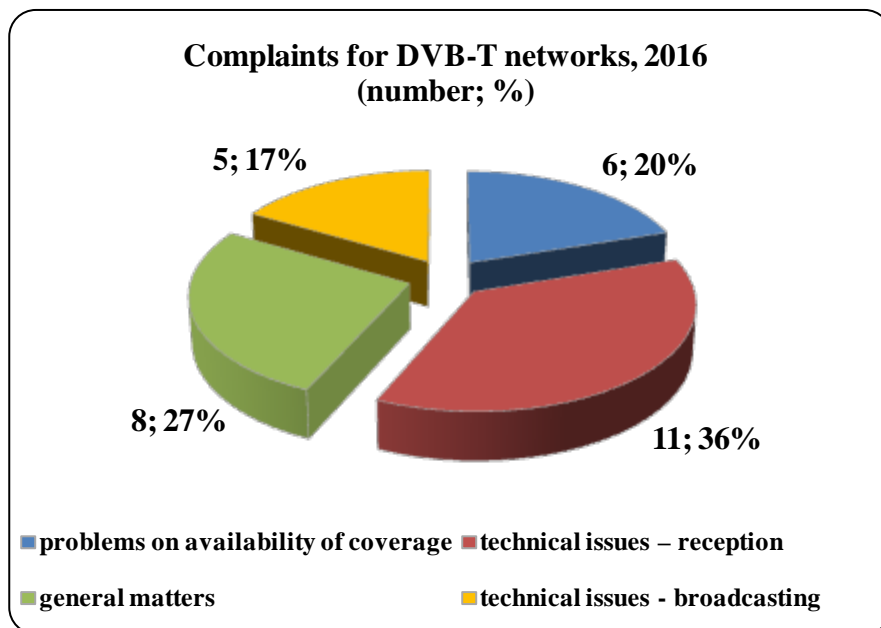
Fig. 49



Source: CRC

Fig.50

- monitoring and inspections concerning received complaints and signals related to the ensured coverage of the terrestrial digital television of DVB-T standard:
 - measurements and inspections were carried out in relation to 30 complaints and signals from applicants as forwarded to CRC from other institutions (CEM, MTITC, etc.);
 - for the results from the performed planned measurements and inspections under complaints, 894 measurement reports were drawn up – an analysis of the results of the inspections made in relation to received complaints regarding issues with the coverage of electronic communication networks under DVB-T standard is presented on Fig. 51.

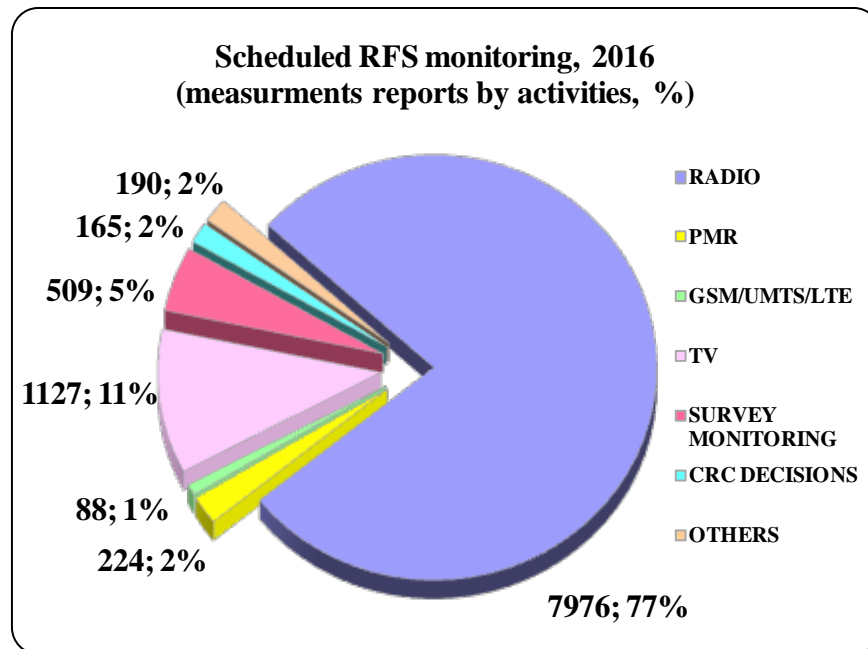


Source: CRC

Fig. 51

- coverage of mobile terrestrial networks:
 - in relation to received 109 complaints for the lack of coverage, in 2016 an analysis was made and 388 measurement reports and 186 statements were prepared regarding the coverage declared by the undertakings for settlements, subjects to the complaints received by the Commission;
 - for the planned measurements of mobile networks coverage and quality according to standard GSM/UMTS/LTE, 88 measurement reports were prepared.

The results from RFS monitoring and control carried out in 2016 were summarised in 11027 measurement reports, as for the performed planned monitoring 10279 measurement reports were drawn up whose analysis by types of activities is presented on Fig.52.



Source: CRC

Fig. 52

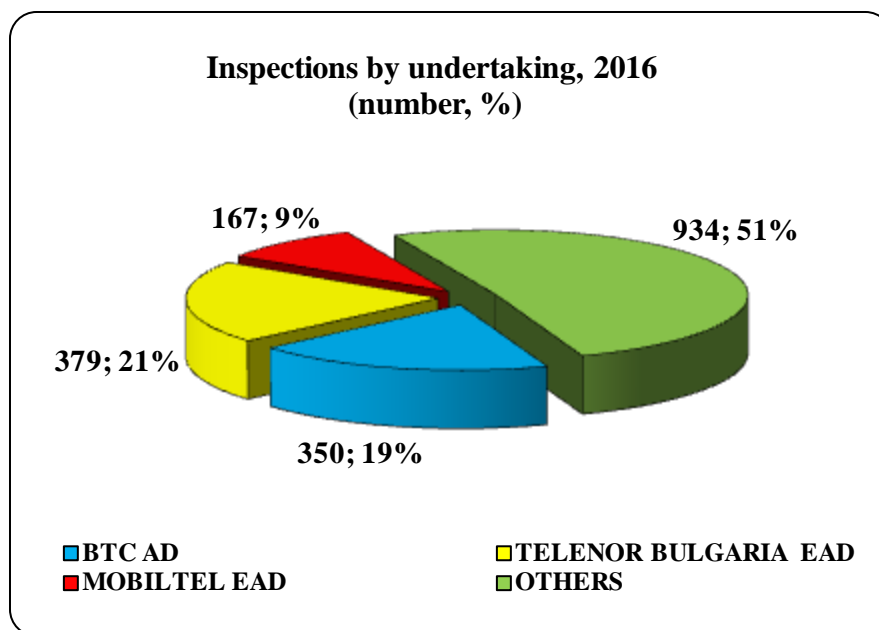
2.5.2. Inspection activity

In connection with implementation of CRC control functions related to electronic communications provision according to the LEC and for compliance with the requirements of LEDES, in 2016 the following main activities were fulfilled:

2.5.2.1. Control on the provision of electronic communications under LEC

In 2016, 1830 inspections were carried out in relation to: implementation of CRC Decisions; compliance with the provisions of the authorisations issued; compliance with the requirements of Chapter Fourteen and Chapter Fifteen of the LEC; compliance with the General requirements for carrying out public electronic communications; sending unsolicited messages for direct marketing and advertising by the undertakings without the prior consent of users; non-provision of itemized bills to end users; portability of geographic and mobile numbers claims of consumers regarding high bills charged and incorrect billing of calls in international roaming; radio interference to legitimate RFS users; problems and/or lack of quality coverage of mobile networks and digital television broadcasting networks; problems with the quality of provided service to end users; provision of services without notification/permission; provision of information to CRC; inspections based on the risk analysis, etc.

About 49 % of the inspections were performed to the three major undertakings providing electronic communications services (Fig. 53) in relation to complaints received in CRC by end users concerning the services provided by them: MOBILTEL EAD – 379 inspections, BULGARIAN TELECOMMUNICATION COMPANY EAD – 350 inspections and TELENOR BULGARIA EAD – 167 inspections.



Source: CRC

Fig. 53

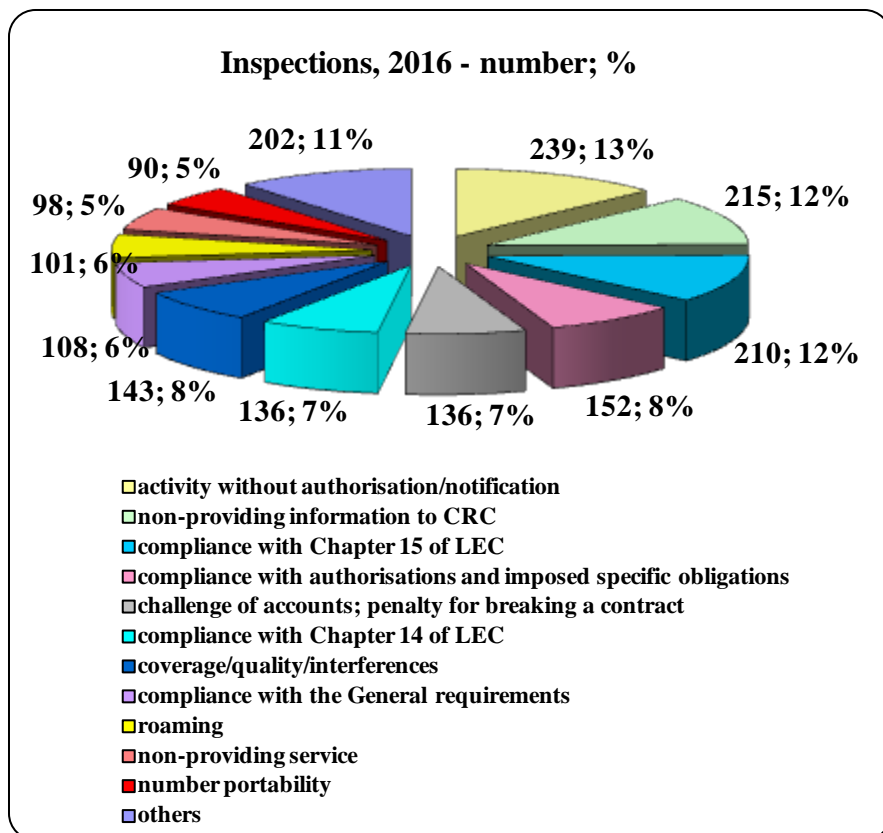
In 2016, the following main inspection types were carried out for compliance with the requirements of the LEC concerning the protection of end users' interests:

- Inspections related to the protection of end user's interests:
 - compliance with the requirements of Chapter Fourteen of the LEC concerning contracts with undertakings providing electronic communications services: elements of individual contracts offered, terms and conditions of the services offered, prices of services offered, price packages or tariffs and conditions for their usage, general terms of individual contracts offered, etc.- 132 inspections were carried out of: MOBILTEL EAD – 50 inspections; BULGARIAN TELECOMMUNICATION COMPANY EAD – 26 inspections; TELENOR BULGARIA EAD – 19 inspections and 37 inspections of other undertakings providing electronic communications services; for ascertained violations of Chapter Fourteen of the LEC, in 2016, 5 acts of administrative violations (AOVs) were drawn up;
 - concerning contesting bills and accrued penalties - in 2016, a total of 152 inspections were carried out, of which: MOBILTEL EAD – 68 inspections, BULGARIAN TELECOMMUNICATION COMPANY EAD – 45 inspections and TELENOR BULGARIA EAD – 39 inspections;
 - compliance with the requirements of Chapter Fifteen of the LEC concerning the protection of consumer data – 210 inspections were carried out concerning:
 - free-of-charge provision of itemized bills for services used – 87 inspections;
 - sending unsolicited messages for direct marketing purpose and advertising without the prior consent of the users – 123 inspections;

For ascertained violations of Chapter Fifteen of the LEC, in 2016, 17 acts of administrative violations (AOVs) were drawn up.

- Inspections concerning compliance with the General requirements for carrying out public electronic communications – in 2016, a total of 108 inspections were carried out, of which: BULGARIAN TELECOMMUNICATION COMPANY EAD, MOBILTEL EAD and TELENOR BULGARIA EAD – 43 inspections and 65 inspections of other 23 undertakings providing electronic communications services. For ascertained violations of the General requirements, in 2016, 45 acts of administrative violations (AOVs) were drawn up.
- Inspections related to solving problems in the number portability implementation in case of changing the telephony service provider - in 2016, 90 inspections of complaints related to obstructing the users' right to portability of mobile and fixed numbers were carried out and 12 acts of administrative violations (AOVs) were drawn up.
- Inspections concerning compliance of the transmission stations and compliance with the conditions for provision of the authorisations and Decisions of the CRC - in 2016, 136 inspections were carried out, as 32 inspections were carried out of the electronic communication networks for terrestrial analogue broadcasting and digital television broadcasting for compliance of the transmission stations with the technical parameters approved by CRC, as well as compliance with the provisions of the authorisations issued and with the Technical requirements for operation of the electronic communication networks of the radio broadcasting service and the related equipment. The inspections established that 30 transmission stations complied with CRC decisions. The remaining two inspections established incompliance and instructions for their elimination were given. It has been found that the undertakings had taken the measures necessary for compliance of the transmission stations.
- Inspections of electronic communication networks of the mobile radio PMR in relation to the effective use of the scarce resource provided – radio frequency spectrum – 71 inspections were carried out of undertakings providing electronic communications for their own needs via electronic communication network from the mobile radio service of the PMR type; 6 acts of administrative violations (AOVs) were drawn up.
- Inspections of cable electronic communication networks for transmission and/or distribution of radio and television programmes, for data transfer without use of scarce recourse – 356 inspections were carried out for compliance with the General requirements, provision of electronic communications services without notification submitted and non-fulfilled obligations to provide CRC with information; 101 acts of administrative violations (AOVs) were drawn up related to non-fulfilled obligations to provide CRC with activity report for 2015, incompliance with the General requirements for carrying out public electronic communications, etc. In 2016, 223 (about 12 %) of the inspections carried out were on the basis of the risk analysis – inspections concerning provision of electronic communications by undertakings that had submitted notifications to CRC for termination of their activity, inspections concerning performance of activity after withdrawn and suspended authorisations or expired licenses, as well as inspections for compliance with the General requirements.

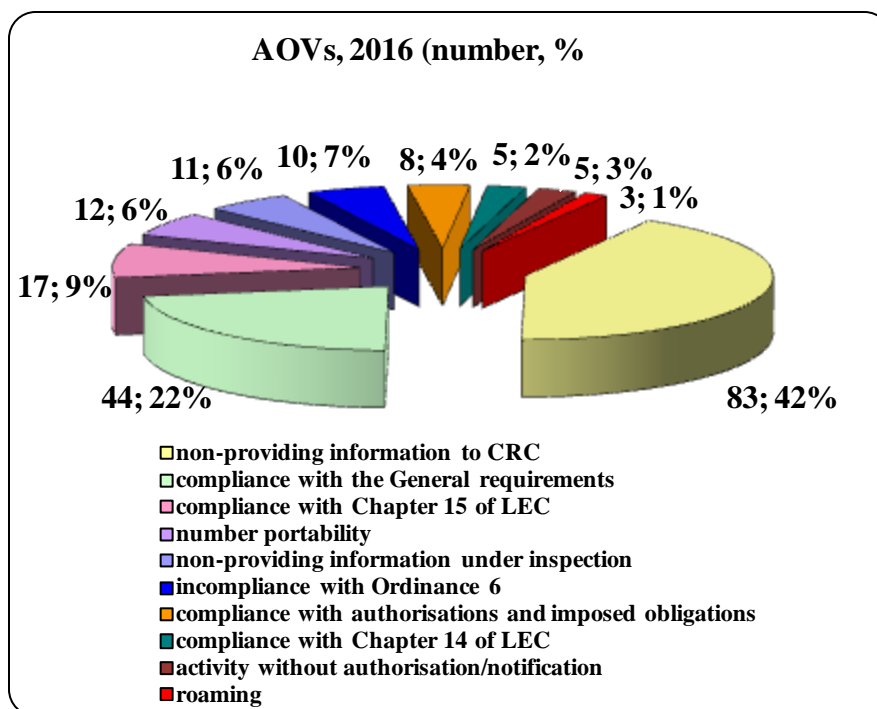
The summarised data for the performed control activity and the engaged administrative and punitive liability in violations of the LEC and secondary regulations in 2016 are shown on Fig.54 and Fig.55.



Source: CRC

Fig. 54

As a result of the inspections carried out, for the administrative violations of the LEC established, 198 acts of administrative violations were drawn up in 2016.



Source: CRC

Fig. 55

2.5.2.2. Control activity on the compliance with the LEDES requirements:

In 2016, 4 scheduled inspections were carried out concerning compliance with the LEDES requirements. During the inspections, no violations of the LEDES requirements were found.

2.6. Administrative penal responsibility

In order to direct the undertakings' behaviour in favour of end users, in 2016 the Chairman of CRC issued 210 (two hundred and ten) penal decrees (PDs) for violations of the regulations controlled by the Commission. The total amount of sanctions determined by PDs is BGN 1 348 100.

2.7. Protection of the interests of electronic communication services users

One of the main CRC's purposes is to ensure a high level of consumer protection in their relation with the undertakings providing electronic communications services. In this connection, CRC regularly monitors the problems in the area of consumer protection when providing electronic communications services and takes action to solve them.

In 2016 the Communications Regulation Commission (CRC) received 2 557 complaints by users against different undertakings providing public electronic communications services. CRC received 50 inquiries under the LEC.

User complaints concern the following problems:

- cable damages – 8 complaints;
- credit limit – 18 complaints;
- quality of telephony services/fax – 15 complaints;
- overhead cables – 8 complaints;
- mobile network coverage – 204 complaints;
- quality of Internet access service – 81 complaints;
- unfair trade practices – 76 complaints;
- lack of fixed telephony service – 26 complaints;
- complaints under Art. 231 of the LEC – 22 complaints;
- complaints from the tariffing of mobile telephony services – 5 complaints;
- incompetent service – 101 complaints;
- non-provision of itemized bills – 21 complaints;
- contract termination– 132 complaints;
- bill complaints – 447 complaints;
- contract termination (Art.229a of the LEC) – 27 complaints;
- contract termination (Art. 228, para. 3 and para. 5 of the LEC) – 44 complaints;
- receiving unsolicited commercial messages – 84 complaints;
- geographic number portability – 6 complaints;
- mobile number portability – 20 complaints;
- remote sale contracts – 40 complaints;
- collecting of liabilities by collection companies – 83 complaints;
- roaming – 28 complaints;
- border areas “roaming” – 8 complaints;
- contractual relations – 169 complaints;
- bill for mobile Internet use – 84 complaints;
- locked telephone device – 7 complaints;
- TV service quality – 36 complaints;
- mobile Internet quality – 26 complaints;
- prepaid service issues – 32 complaints;
- complaints from electronic emissions – 9 complaints;
- complaints under Art. 42 – Art.45 of the General requirements – 26 complaints;
- complaints under Art. 46 – Art. 48 of the General requirements – 14 complaints;
- complaints under Art. 49 of the General requirements – 17 complaints;

- telephone frauds – 4 complaints;
- complaints about constructed electronic communication networks– 1 complaint;
- roaming bills – 85 complaints;
- ambiguity in contractual terms – 42 complaints;
- complaints about value-added services – 51 complaints;
- failure to provide mobile telephone service – 2 complaints;
- quality of mobile telephone service – 6 complaints;
- non-provision of itemized bill – 18 complaints;
- others – 195 complaints;
- activation of an unsolicited service – 5 complaints;
- penalties – 189 complaints;
- unwanted services – 4 complaints;
- non-provision of contracted service – 31 complaints.

More than half of the received complaints refer to issues with coverage, incompetent service, contract termination, value-added bills, contractual issues, penalties, etc.

It is clear that the number of bill complaints is considerably less. In 2015 their number was 711, while in 2016 – 447.

When the complaint concerns non-fulfilment of contractual obligations (contract dispute), the regulator requested opinions of the respective undertaking, in order to cooperate and assist the affected end user. As a result of these actions, the undertakings respected the CRC's recommendations, which led to resolving the dispute in favour of the user. In this connection, of the total number of opinions requested from undertakings, more than half were in favour of the user, which led to resolving the dispute.

A number of complaints were forwarded by competence to other state bodies (Commission on Consumer Protection (CCP), the National Construction Supervision Directorate, the Commission for Personal Data Protection, the Ministry of Health, the Prosecutor's Office of the Republic of Bulgaria, etc.).

2.7.1. Amendments and supplements of the General requirements for carrying out public electronic communications (General requirements)

By Decision No.355/23.06.2016, the CRC amended the General requirements in order to strengthen protection of the electronic communications services users.

Rules have been introduced to oblige the undertakings to include personalised information for the promotion terms under which the services shall be provided in the individual contracts.

By an explicit provision the undertakings were obliged to notify the subscribers of prepaid services for changes in the terms under which these services have been used.

In connection with the increased number of complaints concerning value-added amount for "mobile data transfer" service, CRC regulated the subscribers' right to deactivate the access to this service. The free-of-charge deactivation is performed within one working day of receipt of the request in the undertaking.

Provisions have also been adopted which obliged the mobile services providers to publish electronic maps of the mobile networks coverage provided on their websites.

For the first time, requirements were set regarding the form in which the itemized bills under Art.260, para.1 of the LEC shall be provided.

In order to prevent abuse and frauds with telephone numbers, the undertakings providing public telephone services were obliged to make it possible for the called and calling subscriber immediately to discontinue the established telephone connection after end of the call.

2.7.2. Procedures carried out by CRC under Art.78 of the LEC

At present, CRC has adopted 3 decisions under Art.78 of the LEC, regarding non-compliance with the General requirements. With the decisions on the relevant undertakings were imposed obligations for termination of identified violations of the General requirements affecting consumers, as well as for preventing further infringement of consumer rights.

Two of the decisions have entered into force, one was appealed before a 5-member panel of the Supreme Administrative Court.

2.7.3. Information campaigns to increase the consumer awareness

Roaming User Guide concerning the terms of use of roaming services including the period 30.04.2016 – 15.06.2017 (the so called "transition period").

The amendments of Regulation (EU) No. 531/2012 keep in force the measures imposed so far and prepare the ground for the abolition of roaming surcharges within European Union by mid- 2017. The way in which roaming tariffs are formed is generally changed.

Taking into account the amendments in the European legal framework, CRC considered it necessary to prepare and publish a detailed guide providing the consumers with up-to-date information about their rights when using roaming services.

In 2016 CRC organised 4 reception-rooms on site for end users in the towns of Stara Zagora, Plovdiv, Burgas and Yambol where consumers had the opportunity to explain their complaints, as well as get competent advice in order to resolve disputes.

All complaints lodged during the reception-rooms on site have been timely reviewed and actions within the legal framework have been taken.

2.7.4. Cooperation with CCP

There is shared competence between CRC and CCP on a part of the issues related to consumer protection in the area of electronic communications services. For example, complaints related to distance contracts, unfair trade practices, removing unfair contract clauses, charging of unsolicited services, are of CCP competence.

In this connection and in implementation of the law, CRC has referred many consumers' issues to CCP.

In connection with the provision of Art.37a of the LEC, CRC informed CCP of opening the procedure for amendments of the General requirements, giving it the opportunity to express an opinion on the provisions related to protection of consumers.

2.7.5. Other activities

CRC performed a detailed analysis on the terms and conditions for the provision of prepaid services and changes in the periods of the prepaid card credit validity.

The great number of inspections carried out by CRC found that the prepaid subscribers of Telenor Bulgaria EAD and Mobiltel EAD have been informed for the changes made by sending short text messages and publishing information on the undertakings' websites. The changes have been carried out in compliance with the transparency requirements regulated by the LEC.

In order to examine the European practices concerning prepaid telephone services, a questionnaire has been sent to BEREC. It included questions about the period of the prepaid card credit validity, as well as whether the relation between the validity period of the prepaid cards and loaded credits are regulated.

The practices of 16 European countries which participated in the study were analysed. The results show that in the most of these European countries, the relations regarding the prepaid cards' validity period and loaded credit are not regulated. Validity period regulation is available only in few countries participated in the study (only Turkey has introduced a minimum period for the prepaid cards – 9 months, but not for the loaded credit,also Croatia has introduced minimum validity period for the credit loaded in the prepaid cards – 90 days). In most of the countries, there is regulation with regard to transparency requirements and ensuring the right to informed choice of the prepaid services subscribers.

The LEC provides a number of obligations for undertakings providing public electronic communications services in order to ensure transparency and user's right to informed choice.