

REPUBLIC OF SERBIA
RATEL
REGULATORY AGENCY FOR
ELECTRONIC COMMUNICATIONS
AND POSTAL SERVICES



2017 ANNUAL REPORT



**ANNUAL REPORT OF THE REGULATORY
AGENCY FOR ELECTRONIC COMMUNICATIONS
AND POSTAL SERVICES
FOR THE YEAR 2017**

Belgrade, March 2018

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WORD OF DIRECTOR

In 2017, the Regulatory Agency for Electronic Communications and Postal Services, as the national regulatory authority for electronic communications, postal services and information society undertook a number of activities with the aim to improve the conditions for the operators on the telecom and postal markets, foster market competitiveness, enhance the quality of service and ensure a greater degree of end user protection and, also, to promote information security in the Republic of Serbia. Furthermore, RATEL was intensively engaged in technical capacity building for the purpose of performing the entrusted tasks.

The most important developments concerning regulatory activities in 2017 are given below.

The total of 12331 RF spectrum usage permits were issued, seven rulebooks passed by the Managing Board, two Special CERTs were registered, 767 new files were opened regarding user complaints (360 of which had a positive outcome for the users), 724 certificates on conformity of R&TT equipment were issued, 58 decisions on allocation, extension or withdrawal of numbering resources were issued, 8 new permits for postal services provision were issued, 155 certificates on operator entry/deletion made in the Register and 4895 control and measurement logs were made in the data base.

RF spectrum monitoring infrastructure has seen major improvements with the completed reconstruction of the monitoring centre in Niš. Also, the process related to location acquisition for a new monitoring centre in Vojvodina began and the contract was signed for RF spectrum monitoring stations network rollout on 4 locations in Serbia: Vizić, Vincaid, Vidojevica and Stanišić.

A portal for network of sensors used for a continuous and long-term measurement of EM level produced by electronic communications networks and equipment - EMF RATEL was launched, at <http://emf.ratel.rs>. The sensors are placed at nine locations in Belgrade, Novi Sad and Niš.

Market analysis was initiated or completed for the following relevant markets: Wholesale broadband access, Wholesale call origination on the public telephone network at a fixed location, Wholesale call termination on individual public telephone networks; Retail access to the public telephone network at a fixed location, Wholesale call termination on mobile networks, Wholesale local access provided at a fixed location, Wholesale high-quality access provided at a fixed location. Also, the development of LRIC (long run incremental cost) model for

fixed and mobile networks has been completed and will begin to be applied once the new rulebook is passed.

The project involving mobile network benchmarking for the services provided to end users by the mobile operators in the Republic of Serbia, for all available technologies - 2G/3G/4G, and KPI measurement for voice and data services has been completed and the results are available at <http://benchmark.ratel.rs>. The results indicate that on average QoS provided to mobile users in the Republic of Serbia is essentially at the same level as in most European countries.

The previous year was also marked by the activities focused on establishing the internal organization and administrative capacities needed for the national CERT to become operational.

RATEL's electronic system for submitting applications for the issuance of individual licences for radio frequency usage is effective as of September 1, 2017. Some of the benefits of the e-licence system are automatic technical data in the frequency planning software, automatic data entry in the license database, automatic payment confirmation and the possibility of automatic technical data transfer to RATEL's portal (M2M). The licences are available via web portal at: <http://portal.ratel.rs/dozvole-za-radio-stanice/cyr/index/intro>.

After two years of work and eighth meetings held, the international SEDDIF WG for (470-694 MHz) spectrum optimization and re-planning for broadcasting service completed its task.

RATEL signed a Memorandum of Cooperation in the Field of ICT with the Government Office for Information Technologies and e-Government on September, 22. Also, a Memorandum of Understanding in the field of electronic communications was signed between RATEL and the Hungarian NMHH during BEREC plenary meeting in Bucharest, on October 5, 2017.

During 2017, RATEL hosted a number of important international meetings:

- the first meeting of the Forum for cooperation of the regulatory authorities for electronic communication of Bosnia and Herzegovina, Montenegro, Macedonia and Serbia, held on November, 23 ;
- BEREC Contact Network (CN) meeting held on September, 14-15, attended by over 80 representatives of NRAs from 37 European countries;
- The meeting of two ERGP EWGs held on September 19-20, attended by more than 40 participants;
- international meeting on the implementation and enforcement of the Radio Equipment Directive (RED), on October 16-17, attended by the representatives of the regulatory bodies and state organizations of Albania, Bosnia and Herzegovina, Greece, FYR Macedonia, Slovenia, Serbia, Croatia and Montenegro.

It should be noted that the Committee on Spatial Planning, Transport, Infrastructure and Telecommunications of the National Assembly of the Republic of Serbia unanimously adopted the 2016 Annual Report on Work of the republic Agency for Electronic Communications and Postal Services, in its 17th session held on 14.09.2017.

During the 33rd BEREC plenary meeting in Copenhagen, the elections were held on December 7, 2017 for Chair 2019 and also for Vice-Chairs for 2018, when Mr. Johannes Gungl CEO Telecommunications at RTR (Austria) will be the Chair.

Director of RATEL, Mr Vladica Tintor, was elected IRG non-EU Vice-Chair 2018 and a member of the BEREC mini board for 2018. This is the first time that a Serbian representative is a Vice-Chair of the most important European organization in the field of electronic communications, whose work is expected to be particularly challenging in 2018 when the new EU Framework for Electronic Communications (EECC) is expected to be adopted.

2018 RATEL's Work Plan includes the following priorities:

1: ENHANCEMENT OF THE ELECTRONIC COMMUNICATIONS REGULATORY FRAMEWORK

- Implementing the new Law on Electronic Communications through adoption new bylaws and harmonization with the EU regulatory framework for electronic communications;
- Delivering analysis/study on OTT service regulation.

2: ENHANCEMENT OF THE POSTAL SERVICES REGULATORY FRAMEWORK

- Developing new regulatory framework in accordance with the new Law on Postal Services;
- Introducing expert supervision of operators' work;
- Delivering a study on the impact of e-commerce on the postal services market;
- Providing conditions for UPS feasibility and the analysis of UPS user requirement fulfilment

3: TELECOM AND POSTAL SERVICES USER PROTECTION

- Improving the efficiency of complaint resolution;
- Developing Universal Service;
- Providing and improving user tools;
- Tracking regulated roaming charges;
- Measuring EM field level in rural areas;
- Providing the analysis of UPS user requirement fulfilment.

4: IMPROVED EFFICIENCY OF RF SPECTRUM MANAGEMENT

- Preparing new Allocation Plan and allotments plans;
- Building RF spectrum monitoring system;
- Providing measurement equipment and vehicles.

5: ENHANCEMENT OF TELECOM MARKET COMPETITION

- Performing the analysis of markets susceptible to ex-ante regulation;
- Introducing LRIC (long run incremental cost) model;

- Applying prices control for regulated and bundled services;
- Mobile network benchmarking;

6: SETTING UP THE SYSTEM FOR COORDINATION AND ICT SECURITY RISK PREVENTION

- Implementing incident alert management system;
- Delivering incident protection and management procedures;
- Establishing partnership with international organizations dealing with cyber security.

7: ENHANCEMENT OF RATEL'S INTERNATIONAL PRESENCE

- Participating in working groups and serving as BEREC/IRG Vice-Chair;
- Participating in ERP work and serving as CERP Vice-Chair;
- Improving regional cooperation.

8: ENHANCEMENT OF RATEL'S WORK EFFICIENCY

- Developing e-services for operators;
- Implementing e-services in communication exchange with government authorities;
- Improving regional cooperation;

The results made so far and the future plans are rather reassuring when it comes to maintaining the positive development trend of the electronic communications and postal services, market regulation and implementation of rules regulating information security, and, also, the internal development of the Agency.

Director



Vladica Tintor, Ph.D.E.E.

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INTRODUCTION

The Regulatory Agency for Electronic Communications and Postal Services (RATEL) was established in 2005, under the name of The Republic Telecommunications Agency, in line with the Law on Telecommunications. As a national regulatory authority, RATEL was tasked to ensure efficient enforcement and enhancement of the telecom policy in the Republic of Serbia, aimed at further development of the telecommunications and creation of conditions for the implementation of information society. Following the entry into force of the Law on Electronic Communications in 2010, RATEL continued to work as the Republic Agency for Electronic Communications. With amendments to the Law on Electronic Communications and the Law on Postal Services of 2014, the Republic Agency for Postal Services (RAPUS) was merged with the Republic Agency for Electronic Communications, which, in turn, continued to work as the Regulatory Agency for Electronic Communications and Postal Services, keeping the abbreviated name RATEL.

The Law on Information Security (*Official Gazette of RS*, nos. 6/16 and 94/17) adopted by the National Assembly of the Republic of Serbia on 26 January 2016, RATEL was entrusted with the activities of the National Computer Emergency Response Team (CERT) in charge of coordinating the prevention of and protection from the Serbian ICT system security risks at a national level.

RATEL's position in the legal system of the Republic of Serbia is stipulated pursuant to the provision of Article 137, paragraph 3 of the Constitution. In the Law on Electronic Communications (*Official Gazette of RS*, nos. 44/10, 60/13-Const. Court Dec. and 62/14) RATEL is defined as an autonomous organisation, independent of state authorities, organizations and persons performing the activity of electronic communications and separate from the existing state administration structure, in order to ensure a high level of autonomy and independence in performing the entrusted public competencies. The manner of financing is a mechanism ensuring RATEL's financial independence and RATEL's revenues stipulated by the law are not budgetary assets by their legal nature. As RATEL's work is not financed from the budgetary assets, greater level of efficiency in electronic communications activities and necessary distance from political influence are ensured.

RATEL performs public administrative functions aimed at implementation of the set policies in the domain of electronic communications and postal services, fostering competition on the markets of postal and electronic communications networks and services, improving their capacities and quality, monitoring market development and protecting users' interests. As the national regulatory authority of the Republic of Serbia responsible for the domain of electronic communications and postal services, RATEL's task is to enable successful liberalization in the sector of telecommunications and postal

services, radio frequency management and spectrum monitoring (RF spectrum representing a scarce resource of national importance), as well as harmonization of the national legislation with the EU regulatory framework. Also, RATEL performs the tasks of a National Centre for the Prevention of Security Risks in ICT Systems (National CERT), involving coordination of prevention of and protection from the security risks to ICT systems on a national level.

RATEL's authority in market regulation in the field of electronic communications and postal services involves the following:

- deciding on operators' and users' rights and obligations,
- adopting rulebooks, decisions and other legal acts within its competence,
- establishing available paths for radio relay links and protection zones,
- radio frequency usage planning, RF spectrum management, radio frequency usage licenses issuance, radio frequency usage coordination and monitoring,
- checking operators' fulfilment of obligations regarding interconnection, access and interoperability of networks and services,
- universal service,
- relevant markets analysis, designating operators with significant market power and their obligations, in order to prevent monopolistic behaviour and foster market development through competition,
- managing the numbering plan and adopting draft Allocation Plan and Allotment Plans,
- monitoring quality parameters set for publicly available services,
- adopting general terms and conditions for the provision of postal services, quality standards in the provision of postal services and monitoring their application,
- resolving user complaints,
- setting detailed terms and conditions for license and authorization issuance and revocation and
- keeping records of issued licenses.

By the Decision of the National Assembly of the Republic of Serbia (*Official Gazette of RS*, no. 20/2016) of March 3, 2016, new members of the Managing Board were appointed:

1. Dragan Kovačević, Chair
2. Petar Stijović, Vice Chair
3. Danka Martić, member
4. Dr Vladimir Krstić, member
5. Prof. Dr Dejan Marković, member

The five-year term of office of the new Managing Board members started on April 1, 2016.

During 2017, the Managing Board held 13 sessions, where a number of Rulebooks were adopted and Draft rulebooks to be adopted by line minister, decisions, reports on relevant market analysis, internal acts, Plan of Activities, Financial Plan and Procurement Plan for 2018 were passed.

On January 27, 2017, the Rulebook on Internal Organization and Job Classification in RATEL was adopted, which brought about changes in RATEL's organizational structure.

During 2017, the Agency's activities were carried out by the following organizational units:

- Electronic Communications Department, comprising Radiocommunications Section, Monitoring Section, Electronic Equipment and Networks and Services Section;
- Legal and General Affairs Department, comprising Legal Affairs Section, Human Resources, Procurement and General Affairs Section and Strategy and Planning Division;
- Market Analysis and Economic Affairs Department, comprising Market Analysis and Cost-Accounting Section, Accounting and Finance Section and Fee Management Division);
- Postal Services Department, comprising Postal Regulation Section, Postal market regulation and Analysis Section and Registry and Record Office Group;
- Information Security and Technologies Section, comprising Information Security Group and Information Technology Group and
- Cabinet.

The financial assets for RATEL's work are provided from the revenues made from the numbering fees, radio-frequency fees, fees for performing electronic communication activities, annual fees for the provision of postal services and revenues from the provision of services within RATEL's competence (license issuance and extension, equipment conformity assessment, technical inspection). RATEL's annual 2017 Financial Report, which had been audited by an independent chartered auditor, was approved by the Managing Board.

Since 2017 RATEL's books are kept and financial reports prepared, compiled, submitted and published in line with the Law on Accounting, Rulebook on contents and form of financial reports for companies, cooperatives and entrepreneurs, Rulebook on layout of chart of accounts and the contents of the account in the layout of chart of accounts for companies, cooperatives and entrepreneurs, International accounting standards and/ or International financial reporting standards, according to the recommendation of the State Audit Institution. RATEL also submits the financial reports to the Business Registers Agency, since the publishing of 2017 financial reports.

In 2017, RATEL's total revenues amounted to 2 009 998 680.25 dinars, with the total expenditures of 902 571 018.95 dinars. Pursuant to Article 27, paragraph 6 of the Law on Electronic Communications, the surplus representing the difference between the revenues and expenditures laid down in RATEL's annual financial report is paid into public revenues account of the Treasury of the Republic of Serbia and the Autonomous Province of Vojvodina. These funds are dedicated to the promotion and development of electronic communications and information society and are managed by the line ministry. Funds paid into the account of the Treasury of the Autonomous Province of Vojvodina are proportional to the revenues made by the electronic communications network and service operators in the territory of the Autonomous Province of Vojvodina and are managed by the province body responsible for electronic communications.

On 31 December 2017, RATEL had 132 employees, 81,06% of which have a university degree, 2,27% a college degree, 15,91% are with secondary education and 0,76% elemen-

tary education. The majority of employees with university degree are graduate electrical engineers, IT engineers and transport engineers. Ten employees have a PhD degree.

Since February 1, 2016, the new RATEL's headquarters are in 2, Palmotićeve Street, in Belgrade. RATEL also performs its activities from two Monitoring and Measurement Centres located in Dobanovci and Niš. Pursuant to the provision of Article 39 of the Law on Free Access to Information of Public Importance (*Official Gazette of RS* nos. 120/04, 54/07, 104/09 and 36/10) and Instructions for preparing and publishing the report on the work of a state authority issued by the Commissioner for Information of Public Importance and Personal Data Protection, RATEL prepared the Information on RATEL's Activities for 2017, which is available on RATEL's website.

All relevant information on RATEL's activities, regulations regarding electronic communications, postal services and information security, registries containing database from records kept by RATEL, forms and instructions for operators and users and other information of public interest pertaining to RATEL's business activities are available on the website www.ratel.rs.

In November 2017, RATEL's Managing Board adopted RATEL's Plan of Activities for 2018, in line with its authority and current trends in the development of telecom and postal services and information security, taking into account the needs of the operators and end users. The Plan lays down the following eight strategic priorities for 2018:

- 1. Enhancement of the electronic communications regulatory framework**
- 2. Enhancement of the postal services regulatory framework**
- 3. Telecom and postal services user protection**
- 4. Improved efficiency of RF spectrum management**
- 5. Enhancement of telecom market competition**
- 6. Setting up the system for coordination and ICT security risk prevention**
- 7. Enhancement of RATEL's international presence**
- 8. Enhancement of RATEL's work efficiency**

Overview of the most important activities carried out in 2017, along with their results, is presented in the following chapters of this report. The overview of the activities presented in the Report is divided according to different areas of work. All RATEL's organizational units participated in the realization of the activities foreseen in the Plan of Activities for 2017.





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REGULATORY ACTIVITY

As part of its regulatory competencies, in 2017, RATEL passed the Rulebook on amendments to the rulebook on quality parameters for enhancing postal services and minimum quality for performing the universal postal service (*Official Gazette of RS*, no. 98/17).

Rulebook on general terms and conditions for performing electronic communication activities under the general authorization regime was prepared and Amendments to the Numbering Plan were made upon the completed public consultations inviting the expert and general public to participate in decision-making procedure. All comments and suggestions received before deadline were published at RATEL's website and the bylaws were submitted to the line ministry on 30 June 2017 in order to provide the opinion on conformity with the Constitutions and laws.

The final version of the Draft Rulebook on the manner of RF spectrum usage monitoring, technical inspection and protection from harmful interference and of the Draft Rulebook amending the Rulebook on quality parameters for publicly available electronic communication services and control of electronic communication activity performance, that will be finalized following the adoption of the new law regulating electronic communications.

During 2017 RATEL prepared Draft Rulebook stipulating the Frequency/location/area allocation plan for audio broadcasting stations in VHF band (216-230 MHz) for the territory of the Republic of Serbia which was submitted on 28 November 2017 to the line ministry, which is in charge for its adoption.

Draft Rulebook on radio equipment aligned with the Radio Equipment Directive (RED) is underway and, upon the completed public consultations, it will be submitted to the line ministry, which is in charge for its adoption.

The position on the Strategy for the development of information security for the period 2017-2020 and the opinion on the Draft Rulebook on specific requirements for being listed in the Register of autonomous incident handling teams (Special CERTs), which was adopted and published in the *Official Gazette of RS* no. 12/17, had been submitted to the Ministry of Trade, Tourism and Telecommunications.

Comments on the text of Chapter 2 and suggestions for Chapters 3, 4 and 5 of the Strategy for the development of new generation networks until 2023 were prepared and submitted to the line ministry.

Opinion on the text of the Action Plan for the implementation of the e-government development in the Republic of Serbia for the period 2017-2018 was submitted to the Ministry of Public Administration and Local Self-Government.

Active contribution was made to the implementation of the Law on Information Security with the adoption of the model for Act on information and communication systems security, designed for providers of essential services who are required to adopt such act.

The Protocol on cooperation between the Ministry of Trade, Tourism and Telecommunications and RATEL, for the purpose of sharing information on incidents that may significantly affect the information security of essential services in the Republic of Serbia, was prepared and should be signed soon.

The user procedure for being listed in the Register of autonomous incident handling teams (Special CERTs) was made.

Two proposals for adopting the Decision on amending the Decision on establishing the Coordination Body for Information Security Activities were initiated by RATEL via line ministry, adopted by the government and published in the *Official Gazette of RS*, nos. 79/17 and 112/17.

In cooperation with the Public Policy Secretary Office of the Republic of Serbia, RATEL's representatives participated in the training and signed the administrative procedures for the single state administration database, according to set practice.

As part of the implementation of the legal competences, RATEL has also adopted a number of additional separate acts regulating the electronic communications market.



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RADIOCOMMUNICATIONS

During 2017 RATEL worked on general acts foreseen by the Law on Electronic Communications and on other bylaws from the domain of radiocommunications and undertook activities pertaining to the radio frequency usage. The activities in the area of radio frequency spectrum management involved the issuance of individual licenses for radio frequency usage, radio frequency coordination and notification and radio frequency spectrum monitoring.

Upon user requests for the issuance and extension of individual licenses for the usage of radio frequencies, 976 draft decisions on the issuance of individual licenses for the usage of radio frequencies were prepared. Based on these decisions, in accordance with the Law on Electronic Communications, 12331 individual licenses for radio frequencies usage were issued, namely:

- **12044** individual licenses for the usage of radio frequencies based on users' requests, pursuant to Article 86 of the Law on Electronic Communications;
- **19** individual licences for radio frequency usage for radio stations on board an aircraft;
- **46** individual licences for radio frequency usage for radio stations on board ships and other vessels;
- **91** individual licences for the usage of radio frequencies for diplomatic and consular representative bodies and foreign legal entities, in accordance with Articles 87 and 88 of the Law on Electronic Communications;
- **131** individual licences for the usage of radio frequencies for amateur radio stations.

In accordance with provisions of Article 95 of the Law on Electronic Communications, **443** decisions on the withdrawal of rights to use radio frequencies were prepared, whereby **5877** individual licences for radio frequency usage were revoked. **48** conclusions and decisions were prepared in a revised procedure, based on Articles 58 and 210 of the Law on General Administrative Procedure.

In the area of radio frequency spectrum usage for broadcasting purposes, analyses of compatibility with the existing (national and international) allotment plans were performed when solving the requests for radio station parameter modifications in order to achieve better quality of service in the service area, in addition to the analyses of requests for removing harmful interference in the service areas, requests for new frequency assignments in view of the existing plans, requests for FM broadcasting transmitter dislocation (the total of 65 analyses and replies to users for FM and another 5 analyses and replies for DVB-T), and the necessary analyses concerning coordination

requests. For the purpose of preparing the Frequency/location/area allotment plan for terrestrial digital audio radio station in VHF band (216-230 MHz) for the territory of the republic of Serbia (T-DAB), analyses were performed for 60 new RF assignments.

During 2017, answers were provided to the following coordination requests involving the coordination of RF spectrum usage with the administrations of the neighbouring and other countries:

- 16 requests for radio relay links, in accordance with the Harmonisation Calculation Method (HCM) Agreement,
- 6 coordination requests for earth satellite stations in fixed satellite service,
- 2 coordination requests for earth stations in mobile satellite service with complementary ground component (CGC),
- 10 request for functional systems,
- 201 requests for FM broadcasting stations
- 3 requests for T-DAB (digital radio),
- 415 requests for DVB-T2 assignments in the frequency band 470-790 MHz (request made by the Republic of Macedonia),
- 697 requests for DVB-T2 assignments in the frequency band 470-694 MHz as part of the working within South European Digital Dividend Implementation Forum (SEDDIF) international work group

Coordination negotiations with the administrations of the neighbouring countries continued in 2017.

In May 2017, a bilateral coordination meeting on audio broadcasting was held in Sarajevo between the administrations of Bosnia and Herzegovina and the Republic of Serbia, resulting in successful beginning of coordination in the particular frequency band. The administration of Bosnia and Herzegovina agreed with 43 frequency assignments for the Republic of Serbia and the Serbian administration agreed with 35 frequency assignments for the Republic of Bosnia and Herzegovina. Lists of the remaining uncoordinated frequency assignments were prepared during the meeting and the cooperation between the two administrations is expected to continue in 2018. Technical agreement on coordination and distribution of preferential frequencies for digital land mobile systems in the frequency bands 380-385 MHz and 390-395 MHz was signed.

Based on the conclusions from the first meeting of the Forum for Cooperation of the regulatory authorities for electronic communication of Bosnia and Herzegovina, Montenegro, Macedonia and Serbia, held in Belgrade in November 2017, efforts are being focused on harmonization and preparing of the technical arrangements on border coordination for terrestrial systems capable of providing electronic communication services in the 3400-3800 MHz frequency band, for ranges allocated to electronic communication service provision. Draft technical agreement was sent to the administrations of Bosnia and Herzegovina, Montenegro and Macedonia and it is expected to be signed during 2018, once the final text is agreed. The technical arrangement on border coordination for terrestrial systems capable of providing for electronic communication services in the 790-862 MHz frequency band was prepared and will be sent to the relevant administrations in March 2018. The signing is expected to take place during 2018.

Technical arrangement between the national frequency management authorities of Austria, Croatia, Hungary, Romania, Serbia, the Slovak Republic and Slovenia on border coordination for terrestrial systems capable of providing electronic communications services in the 1920-1980 MHz and 2110-2170 MHz frequency bands and Technical arrangement between the national frequency management authorities of Austria, Croatia, Hungary, Romania, Serbia, the Slovak Republic and Slovenia on border coordination for terrestrial systems capable of providing electronic communications services in the 790-862 MHz frequency band were prepared and signed was signed on February 14 and 15, 2018 in Budapest. Coordination negotiations on preferential frequency assignments and coordination of GSM1800 in 1710-1785/1805-1880 MHz frequency bands continued to take place.

As part of the international radiocommunications activities, cooperation with the ITU Radiocommunication Bureau also involved IFIC (International Frequency Information Circular): 69 circular notifications on international radio frequency coordination were examined; 25 comments upon requests for satellite networks published in the Special Section AP30B were provided to the ITU, in accordance with the relevant agreements; answers to requests regarding special sections of GE84 and GE06 Plans were provided, in cases where other administrations' proposed modifications affect the planned frequency assignments of the Republic of Serbia (the total of 13 requests for modification of the Geneva 1984 Agreement were published - Spatial Section GE84 Part A - 10 of which affected the planned frequency assignments of the Republic of Serbia) and 80 assignments were analysed.

After two years of work and eighth meetings held, the international SEDDIF WG for (470-694 MHz) spectrum optimization and re-planning for broadcasting service completed its task. As a result of the contribution of RATEL's representatives to this WG, one multilateral and seven bilateral agreements were signed, as follows:

- Multilateral Framework Agreement on frequency coordination for future digital terrestrial television in the frequency band 470-694 MHz between 14 administrations: Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, FYR Macedonia, Hungary, Montenegro, Romania, Republic of Serbia, Slovenia, Turkey and Ukraine (December 6, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Montenegro (December 5, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Bosnia and Herzegovina (December 5, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Croatia (December 5, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Hungary (December 5, 2017, Hungary);

- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Romania (December 5, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and Bulgaria (December 5, 2017, Hungary);
- Agreement on frequency coordination of digital terrestrial television (DTT) in the frequency band 470-694 MHz between the administrations of the Republic of Serbia and FYR Macedonia (December 5, 2017, Hungary);

In 2017, RATEL issued a great number of individual licenses for radio frequency usage in broadcasting service, based on users' requests and decisions of the Council of the Regulatory Authority for Electronic Media on the extension of license validity. A list of licences and users is given in Appendix 2.

ELECTRONIC LICENCES

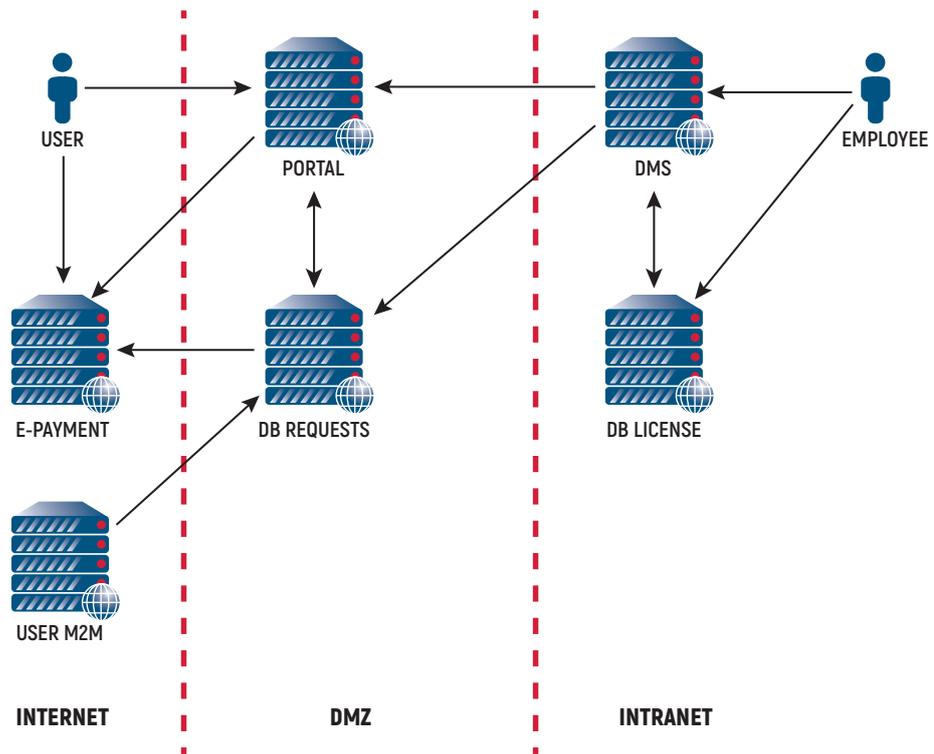
RATEL's system of electronic licences is effective as of September 1, 2017. The main purpose of the e-licence system is automated procedure for submitting and processing of applications for the issuance of individual licences for radio frequency usage. The previous procedure for submitting and processing of applications for the issuance of individual licences for radio frequency usage involved the following steps:

- submitting a hard copy of all required documents,
- manual data entry in the database of radio frequency usage licences,
- payment verification in coordination with the Accounting Department.

Electronic submitting and processing of applications for the issuance of individual licences for radio frequency usage enables the users to access the system via portal, by using the access certificate. The entire procedure, from request submitting to licence issuance, is portal-based, hence there is no need to print and send the documentation by regular mail or to visit RATEL in person and, in turn, there is no need to print or send the licence by regular mail.

The e-licence system architecture is illustrated below.

The complete system consists of several services enabling the processing and exchange of technical and financial information necessary for the entire process of e-licence issuance to be successfully completed. The arrows in the image above indicate the communication path between different components from the moment the request is submitted. The system is integrated with the e-government portal of the Republic of Serbia, which enables e-payments.



The e-licence system architecture

Benefits of the electronic application for the issuance of individual licences for radio frequency usage are the following:

- automation of the process (automatic technical data entry in the frequency planning software, automatic data entry in the license database, automatic payment confirmation, possibility of automatic technical data transfer to RATEL's portal (M2M),
- reduced human factor error,
- resource saving (time efficient solution, reduced printer/paper consumption, reduced mailing expenses),
- user request status available 24/7 on RATEL's portal,
- No need for issuing license duplicates - electronic form of the original is available for download on RATEL's portal.



5

ELECTRONIC COMMUNICATIONS NETWORKS AND SERVICES

During 2017, RATEL continued with the activities aimed at creating free and open markets, while guaranteeing equal treatment for all participants. With the adopted regulations and procedures for the introduction of new technologies and services completed in the previous period, in order to continue fostering competition in the Serbian market of electronic communications, RATEL undertook a set of regulatory activities in this area.

A comparative overview of the number of users and penetration level of the public fixed communications network, public mobile communications network, Internet, media content distribution and bundled services for 2015, 2016 and 2017 is given in Table 1.

Table 1. Comparative overview of the number of users of the basic electronic communication services in the last 3 years

| | 2015. | | 2016. | | 2017* | |
|--------------------------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| | Number (thousands) | Penetration (%) | Number (thousands) | Penetration (%) | Number (thousands) | Penetration (%) |
| Fixed - subscribers | 2 603 | 36.80 | 2 553 | 36.18 | 2 489 | 35.36 |
| Mobile - users | 9 156 | 129.38 | 9 094 | 128.85 | 8 617 | 122.39 |
| Fixed broadband - subscribers | 1 321 | 18.48 | 1 450 | 20.55 | 1 488 | 21.13 |
| Cable - subscribers | 1 596 | 22.55 | 1 664 | 23.57 | 1 728 | 24.54 |
| Bundled services - subscribers | 922 | 13.03 | 1 029 | 14.58 | 1 179 | 16.74 |

Source: Data provided by the operators to the Agency in annual and quarterly questionnaires

***Data for the Q4 2017, gathered for 100% of mobile telephony market, over 99% of fixed telephony market and 91% of Internet and media content distribution market (for the remaining 9% of the market, an approximation was made based on historical data).**

**Number of inhabitants as on 1.1.2017 was used (without Kosovo and Metohija), published by the Statistical Office of the Republic of Serbia

RATEL's legal obligation to keep relevant registers, i.e. records of operators is implemented in accordance with the Decision on the manner of keeping registers, records, databases and other information within the competence of the Regulatory Agency for Electronic Communications and Postal Services and their publication on RATEL's website.

In accordance with the Law, at operator' request the total of **58** decisions on allocation, extension or withdrawal of numbering resources were issued.

Table 2. Number of issued decisions for the usage of numbering

| Number category | Number of issued decisions | | |
|-----------------|----------------------------|-----------|------------|
| | Allocation | Extension | Withdrawal |
| Geographic | 23 | - | 3 |
| Non-geographic | 17 | - | 8 |
| Short codes | 5 | - | - |
| Other codes | 2 | - | 11 |

In addition, **10** decisions on allocating prefixes for access to the central database of ported numbers and **39** notifications on numbering assignment fee were distributed.

Amendment was made to the Numbering Plan for the purpose of introducing a new national destination code "77" for nomadic service provided by public voice service operators, whereas national destination code "76" for nomadic service provided by operators other than public voice service operators was sent to the line ministry to provide the opinion on conformity with the Constitutions and laws.

Work began on preparing Amendments to the Rulebook on number portability on public telephone networks at a fixed location and the Rulebook on number portability for services provided on public mobile networks.

The implementation of number portability on public mobile telecommunications networks, which started in July 2011, continued smoothly during the previous year, pursuant to RATEL's general act regulating number portability. During 2017, there were around 123,330 cases of ported numbers on mobile networks, which makes the total of 663,852 ported numbers on mobile networks since this service began to be available.

As of April 1, 2014, fixed telephony users have been able to keep their subscriber number after changing the operator. Number portability procedure is carried out in accordance with the Rulebook on number portability on public telephone networks at a fixed location (*Official Gazette of RS*, no. 52/11) and the Protocol on implementation of this Rulebook, whereby the operators mutually harmonized the procedure regarding administrative questions that can arise in the process of number portability. During 2017, there were around 54,346 cases of ported numbers on fixed networks, which makes the total of 238,044 ported numbers on fixed networks since this service began to be available.

RATEL's representatives took part in the work of the WG formed by the Office for the Coordination of Affairs in the Process of Negotiation with the Provisional Institutions of Self-Government in Priština, concerning the numbering resources issues.

Pursuant to the Rulebook on radio equipment and telecommunications terminal equipment (*Official Gazette of RS*, no. 11/12, applied as of 1.6.2012), in the capacity of a body for the conformity assessment of the radio and telecommunications terminal equipment (R&TT), during 2017 RATEL issued:

- 721 certificates of conformity,
- 490 excerpts from the register of issued certificates.

In addition, 2 requests were forwarded to the line ministry for further procedure, whereas 116 applicants withdrew their requests.

Operators of public electronic communications networks are entitled to require shared use of other operator's or third person's communications infrastructure, if necessary, for a more competitive, cost-effective and efficient performance of the electronic communications activities.

The Rulebook on the manner of collection and publication of the data on type, availability and geographic location of the electronic communications network's capacities (*Official Gazette of RS*, no. 66/15) stipulates record-keeping of electronic communications network capacities which can be subject to shared use, in the form of an aggregated Infrastructure Database (hereinafter: Leased Infrastructure Database).

On December 31, 2017 the database contained infrastructure information on 1429 antenna towers of the operators Telekom Srbija, Telenor and Vip Mobile, data on 1486 optical cables and more than 10,000 elements of cable ducts of Telekom Srbija. Network operators need to update changes in the infrastructure, at least once every 3 months and, in case of new infrastructure that may be subject to shared use, the data have to be provided within 15 days after the deployment. The Leased Infrastructure Database is available to all interested operators of electronic communications networks in the form of Web - GIS application, on RATEL's website. Since March 2017, when this database had been established, there have been over 4200 website visits to the database.

Pursuant to RATEL's decision, the operators of public mobile communications networks - holders of License for public mobile communications network and public mobile communications network services in accordance with GSM/GSM 1800 and UMTS/IMT-2000 standards and holders of individual licenses issued upon conducted public bidding procedures - are allowed to use all assigned radio frequency bands for the provision of electronic communications services at a fixed location by applying CLL technology, in places with up to 1500 inhabitants, based on the official data of the Statistical Office of RS on the last census of population, households and dwellings in the Republic of Serbia. The purpose of applying CLL technology is to provide electronic communication services at a fixed location in rural areas without adequate telecom infrastructure and improved distribution of universal telephone service throughout the territory of Serbia.

In 2017, the work of the following operators was examined: GO LIVE, TELE GO, TDV PLUS, RTS, MEGASOFT-SYSTEM, SMART-NET, SMART-NET KDS, PANSAT и GLOBALTEL.



6

MONITORING OF RADIO FREQUENCY SPECTRUM USAGE AND QUALITY OF SERVICE CONTROL

RATEL performs continuous monitoring of radio frequency spectrum usage, control of the quality parameters of the publicly available electronic communications services and networks, independent technical inspections of radio stations and monitoring of technical inspections performed by other entities and, in certain cases, measurement of EM field level generated by electronic communication equipment.

Radio frequency spectrum usage monitoring in 2017 was performed from monitoring and measurement centres (MMCs), mobile and portable monitoring and measurement stations, and remotely controlled monitoring and measurement sensor stations. The construction of the system of remotely controlled monitoring and measurement stations began in the second half of 2017, which will enable a more efficient RF spectrum usage monitoring on the territory of the Republic of Serbia.

Table 3 shows the number of monitoring and measurement logs made in the database, during 2017.

Table 3 Number of monitoring and measurement logs in 2017

| Number of logs made from MMCs | Number of logs made outside of MMCs |
|-------------------------------|-------------------------------------|
| 1452 | 4895 |

In 2017, no analogue modulated TV station broadcasting was registered on the territory of the Republic of Serbia, instead, the programmes of all TV station are broadcasted via digital transmitter network of the Broadcast Network Public Enterprise (ETV). A number of interferences caused by analogue TV stations in the neighbouring countries were registered in the network and appropriate measures were taken.

There is a tendency for increased usage of digital modulation radio stations in the bands dedicated to the so-called "functional communication systems" (4 m, 2 m, 0.7 m), although analogue radio networks are still being largely used. A number of interference cases, in particular to repeaters in the digital modulation networks, were caused due to unmet requirements concerning EM compatibility at locations with many radio stations, and the users were instructed to select the micro-locations and antenna positions on the masts more carefully.

Due to efficient identification of illegal broadcasting stations, followed by appropriate measures, the illegal usage of broadcasting spectrum in the band allocated to radio signal broadcasting has considerably decreased. The records of unlicensed broadcasting stations identified at the end of 2017, reported to the inspection of the line ministry, are shown in Table 4.

Table 4. Overview of unlicensed broadcasting radio-stations whose activities were identified at the end of 2017

| Ord. no. | Identification | Frequency (MHz) | Transmitter Location |
|--|--------------------|-----------------|----------------------|
| 1. | Radio Zavičaj plus | 104,8 | Godačica |
| 2. | Radio Enigma | 104,3 | Bitovik (Prijepolje) |
| 3. | Radio without ID | 102,2 | Rakovac (Novi Sad) |
| 4. | Radio Zavičaj | 99,2 | Sremska Kamenica |
| Broadcasting stations with expired license that continued with broadcasting: | | | |
| 1. | Radio Sokobanja | 90.5 | Sokobanja |

Further development of mobile networks is illustrated by the number of issued individual licences for RF usage for base stations (in particular, 3G and 4G) and microwave radio stations and, also, by the number of technical inspections performed on radio stations. Compared with 2016, the number of reported harmful interference on these networks increased significantly. The exploration of these interferences involved most staff and technical capacities of RATEL's Monitoring Department. The sources of all reported interferences were located and, in most cases, they were caused by malfunctions of the cable distribution systems or unskilful installation of mobile signal pico repeaters.

235 technical inspections of radio stations in the digital TV signal broadcast network, both broadcasting transmitters and microwave devices. RATEL performed technical inspections with the assistance of the Broadcast Network Public Enterprise (ETV).

In 2017, 9486 technical inspections of different types of radio stations were reported to have been carried out. By the end of 2017, RATEL checked and registered the total of 5960 reports on technical inspections received. Results of the measured parameters during radio station technical inspections are registered via web portal, which facilitates database update and record keeping. In Table 5, three radio frequency spectrum users with the largest numbers of performed technical inspections in 2017 are shown.

Table 5. Users of radio frequency spectrum with the largest number of performed technical inspections

| RF spectrum user | Number of radio station technical inspections carried out in 2017 |
|------------------|---|
| Telenor | 3428 |
| VIP Mobile | 3280 |
| Telekom Srbija | 1097 |

Control of the quality parameters for publicly available electronic communication networks and services is performed based on the Rulebook on quality parameters for publicly available electronic communication services and monitoring of electronic communication activity (*Official Gazette of RS*, nos. 73/11 and 3/14). In 2017, there were 220 requests for quality parameters for publicly available electronic communication networks and services for 2016. The operators submitted reports on quality parameters for publicly available electronic communication networks and services for the previous

year, by March 15, 2017. 59 notifications were prepared, however 21 operators failed to submit the reports following the notification and were reported to the inspection of the Ministry of Trade, Tourism and Telecommunications.

The Control Department solved user complaints on the quality of service of mobile and fixed networks and responded to user inquiries regarding the assessment of impact of mobile base stations on the environment, which involved both field and administrative work.

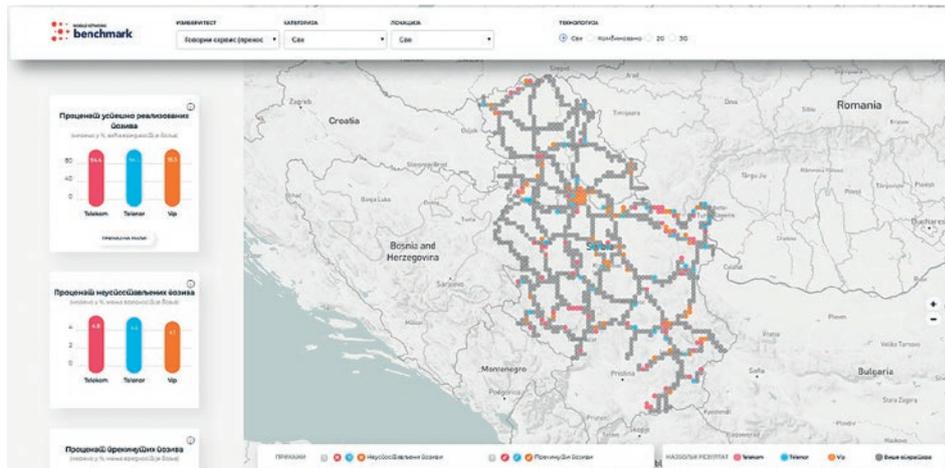
Quality and net neutrality parameters for data transmission on mobile and fixed networks were tested on highways and in rural areas, by using RATEL NetTest application. The enhancement of the application is planned for 2018 in order to provide access to all measurement results, by applying open data concept.

Benchmarking mobile network QoS available to end users

The strategy of RATEL is to encourage further investments and development of telecommunications market by fostering competition, cost-effectiveness and efficiency in the mobile communications, as well as to provide subscribers with fair and unbiased information about the quality of service in the mobile networks in the Republic of Serbia. Therefore, RATEL carried out the first extensive benchmarking tests of the three mobile network operators: Telekom Srbija, Telenor and Vip mobile.

The purpose of mobile network benchmarking is to compare in an objective fashion the quality of mobile network services by measuring Key Performance Indicators (KPIs) which represent user experience of services offered by all mobile network operators. The benchmarking measurements were conducted in September and October 2017, and as of this year, it will be performed as RATEL's regular activity. Measurements were performed in a drive test mode, which means that the measurement equipment was installed in moving vehicles, following predefined routes. Benchmarking measurements covered 35 cities and 10,000 km of Serbian roads. During the campaign, over 6,000 voice calls and 100,000 data sessions were performed for each mobile network operator across all technologies (2G, 3G, 4G) and, in addition, radio parameters were measured for all available technologies and for all three mobile operators.

Once the measurement and analysis of mobile network benchmarking results was completed, interactive portal for mobile network benchmarking was launched (illustrated below), available since late 2017 in Serbian and English language on RATEL's website, at the following link: <http://benchmark.ratel.rs>.



Layout of the Benchmarking interactive portal

Roll out of the continuous EM field level measurement system – EMF RATEL

Based on the feasibility study prepared in 2016 by the School of Electrical Engineering, Belgrade, during 2017 RATEL procured 19 broadband and 2 band-selective sensors for the purpose of roll out of the continuous EM field level measurement system for the territory of the Republic of Serbia.

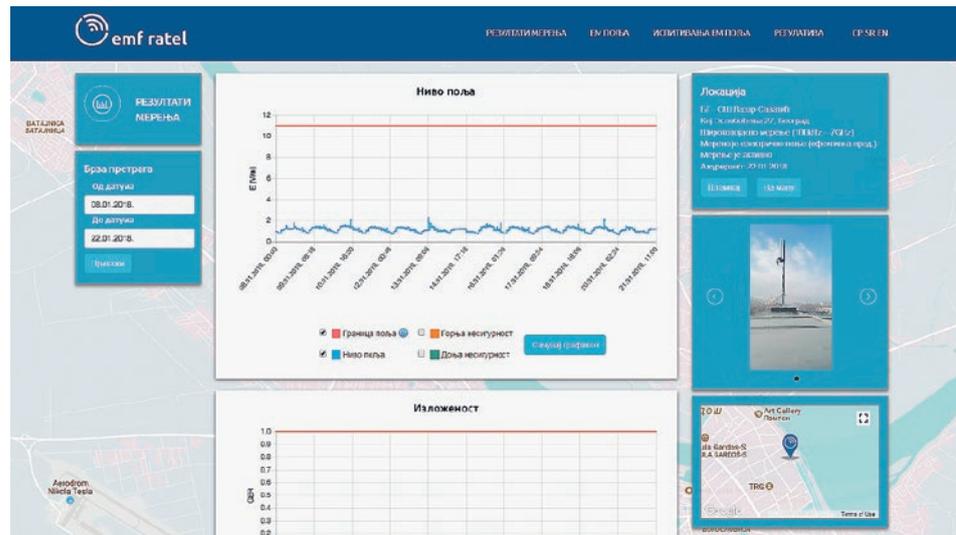
During 2017, more than 50 facilities in the “vulnerable areas” (preschool and school facilities, health institutions) in Belgrade, Novi Sad and Niš were visited for the purpose of EM field measurement and assessment of the technical potential for sensor setup. Nine optimal locations have been chosen, three in each of the cities of Belgrade, Novi Sad and Niš, where broadband sensors have been set up. Further search for optimal locations for sensor setup on relevant facilities will continue for another three years.

EMF RATEL is a system for collecting and presenting the results of the sensor network for EM level measurement. The measurement results are presented on the portal (illustrated below), launched on RATEL's website in late 2017, available in Serbian and English language at the following link: <http://emf.ratel.rs>.

The construction of RF spectrum monitoring system on the territory of the Republic of Serbia

Following the preparatory activities that took place in 2016, the construction of remotely controlled network of monitoring and measurement stations began in 2017. This network is expected to significantly expand and enhance RATEL's system for radio frequency spectrum monitoring, by ensuring a continuous monitoring and a more efficient control of RF spectrum on the whole territory of the Republic of Serbia and in the proximate region.

The guidelines for the concept were provided by the feasibility study “The implementation of RF Spectrum Monitoring System on the Territory of the Republic of Serbia”, prepared by the School of Electrical Engineering, Belgrade in 2011. Experts from RATEL participated in the project design with the input on optimal distribution of locations for remotely controlled monitoring and measurement stations, taking into account all limiting factors encountered



EM field level for a sensor located at elementary school "Lazar Savatic" in Belgrade

on site, while maintaining maximum system performance. Control and measurement equipment was configured so as to allow for RF spectrum monitoring to be performed in all weather conditions at selected locations.

Based on the preliminary analysis, a direct on site assessment and subsequent software-aided detailed analysis, 17 locations, which fully comply with the technical requirements for building an efficient RF spectrum monitoring system, have been chosen.

Construction of the facilities with antenna masts for the first four control and measurement stations began in 2017 and they are planned to become operational by the end of 2Q 2018, whereby the construction of the first phase of the system would be completed. Putting the first phase of the system into operation will enable a continuous monitoring of parameters for all broadcasting and also a number of other transmitters with high-power RF (radio stations in functional link systems, etc.) on the entire territory of Vojvodina and in the areas around Niš and south of Niš.

There will be 16 stations in operation by 2020, which will enable efficient RF spectrum monitoring in terms of continuous monitoring of broadcasting parameters for particular transmitters in the major part of the Republic of Serbia. In the following phase, the precise number of additional control and measurement stations needed to cover the entire territory will be determined through system exploitation. According to current estimation, a system with a total of 20 stations could fully meet the objective.

The introduction of new technologies and networks using low-power RF devices operating in higher frequency bands will impose a future upgrade of the monitoring system, consisting of installing a greater number of simpler stations in urban areas. A number of such stations, which have been set up in Belgrade and Niš are a part of the current RATEL'S RF spectrum monitoring system.



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MARKET ANALYSIS AND PRICE CONTROL

Decision amending the Decision on designating relevant markets susceptible to ex ante regulation (*Official Gazette of RS*, no. 106/16) entered into force on January 5, 2017. With this decision, retail media content distribution and retail publically available telephone service at a fixed location are no longer relevant markets susceptible to ex ante regulation.

In 2017, in line with the competence set out under the provisions of Article 60 of the Law, RATEL carried out the analysis of wholesale broadband access market (May-August 2017). Relevant market analysis procedure was carried out in order to determine the degree of competition and monitor the situation in the market so as to observe the developments occurred since the last analysis. The above analysis was carried out pursuant to the provision of Article 60 of the Law, stipulating that at least once in three years RATEL should conduct the analysis of relevant markets and, if necessary, additional markets, by applying the European Union recommendations on market analysis and identification of significant market power. Upon the completed analysis, the Agency adopted reports on the analysis of relevant markets and published them on its Internet page, pursuant to Article 60, paragraph 3 of the Law.

Article 62 of the Law stipulates that when the Agency, based on the previously performed market analysis, identifies the absence of efficient competition on the relevant market (including any closely related markets), it shall designate, by a decision, an operator as having significant market power (SMP) on that market, separately or jointly with other operators. In this decision, pursuant to the provision of Article 62, paragraph 2 of the Law, the Agency shall impose at least one obligation from Article 63 of the Law on the SMP operator.

SMP operators are required to comply with the prescribed obligations under the terms and conditions laid down in the relevant decision.

Following the performed analysis of the wholesale broadband access market, it was established that Telekom Srbija still had significant market power on this market. In its decision, the Agency designated Telekom Srbija as an SMP operator and imposed the following obligations on this operator:

- publishing of particular data;
- non-discriminatory behaviour;
- accounting separation;
- enabling access to and usage of network elements and accompanying facilities;
- price control and cost-based accounting.

Decision amending the Decision on designating relevant markets susceptible to ex ante regulation, the report on the analysis of the wholesale broadband access market and the decision on designating an SMP operator on the wholesale broadband access market are published at RATEL's website (http://www.ratel.rs/regulativa/analize_trzis-ta.539.html).

In order to align with the EU regulations, RATEL began a new round of market analysis in the second half of 2017, by applying Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation (2014/710/EU), hereinafter: Recommendation 2014/710/EU, with the purpose of adopting a new decision on designating relevant markets susceptible to ex ante regulation, in line with the provision of article 59, paragraph 2 of the Law. Commission Recommendation 2014/710/EU sets out the following markets susceptible to ex ante regulation:

1. Wholesale call termination on individual public telephone networks provided at a fixed location;
2. Wholesale voice call termination on individual mobile networks;
3. (a) Wholesale local access provided at a fixed location;
(b) Wholesale central access provided at a fixed location for mass-market products;
4. Wholesale high-quality access provided at a fixed location.

Pursuant to provision of Article 60, paragraph 1 of the Law, by applying Recommendation 2014/710/EU, RATEL carried out the analysis of Wholesale call termination on the public telephone network at a fixed location and the analysis of Wholesale call termination on the mobile network. The relevant reports had been available for public consultation until November 30, 2017 and December 27, 2017, respectively, and were adopted on January 26, 2018. Once the new Decision on designating relevant markets susceptible to ex ante regulation is passed, relevant decisions designating SMP operators and imposing the obligations on them will be adopted.

Analysis procedure for Wholesale local access provided at a fixed location was carried out and the relevant report was published for public consultation on January 31, 2018. Analysis procedure for Wholesale high-quality access provided at a fixed location has begun and the analysis of Wholesale high-quality access provided at a fixed location will be carried out in 2018.

Another two markets were analyzed, Retail access to the public telephone network at a fixed location and Wholesale call origination on the public telephone network at a fixed location, which had been designated as relevant markets under the Decision on designating relevant markets susceptible to ex ante regulation and are not identified in the Commission Recommendation 2014/710/EU, by applying the three criteria test, in line with the provision of item 2 of the Commission Recommendation 2014/710/EU. Having carried out the market analysis procedure, the Agency found that the three criteria for designating markets susceptible to ex ante regulation have not been met cumulatively in either of the markets and that, hence, they do not represent relevant markets. The reports on the analysis were available for public consultations until November 30, 2017 and December 28, 2017, respectively. With the entry into force of the new Decision on

designating relevant markets susceptible to ex ante regulation these two markets will be deregulated.

In order to ensure the implementation of the obligation of acquiring formal approval when creating and changing the content and price of bundled services by SMP operators, in early 2017 RATEL completed the methodology and the model for applying the "margin squeeze test", used to perform price control for bundled services, before they are offered to end users by SMP operators.

"Margin squeeze test" demonstrates if the prices of wholesale and retail services offered by an SMP operator are at the level that enables other (alternative) operators to offer the same or similar service package at competitive prices. The purpose of this test is to identify situations where an SMP operator offers bundled services at unreasonably low retail prices, which makes it impossible for other operators to offer the same or similar service package by using wholesale services provided by the SMP operator, the prices of which are defined in the SMP operators' standard offers.

Depending on the "margin squeeze test" results, RATEL will either approve the package to be commercially offered on the market or, should the results come in negative, it will demand price correction so as to enable other (alternative) operators to offer the same or similar service package at competitive prices, all in the aim of preserving and fostering market competition and protecting end users.

In late 2017, RATEL completed the project of developing the LRIC (long run incremental cost) model for determining the prices for regulated wholesale services offered by SMP operators on relevant wholesale markets. Introduction of the LRIC model is foreseen in Article 5, paragraph 1 of the Rulebook on the application of the cost-accounting principle, separate accounts and reporting of an operator with significant market power in the electronic communications sector (*Official Gazette of RS*, no. 52/11) and represents the next step in the implementation of the cost-accounting principle. The importance of this implementation is reflected in the influence the model will have on the overall electronic communications market, ensuring a higher accuracy in the pricing of regulated services. Also, it will enhance the harmonization with the current EU legislation and practice concerning price control in relevant electronic communications markets, which will contribute to the establishment of an effective and sustainable market competition and benefits for end users. In order to establish the manner of application of LRIC model, RATEL will prepare a new Rulebook on cost-accounting principle, separate accounts and reporting by SMP operators on electronic communications markets.

Pursuant to the provisions of Article 62, paragraph 4 and Article 68, paragraph 1 of the Law on Electronic Communications, the Agency has been monitoring the implementation of the price control obligation and cost-accounting principle, prescribed in a separate decision as obligatory measure for SMP operators. Telekom Srbija and SBB, as SMP operators on which the obligation of price control and cost-accounting principle was imposed in the decision, deliver regulatory reports in accordance with the Rulebook on the application of the cost-accounting principle, separate accounts and reporting of an operator with significant market power in the electronic communications sector (*Official Gazette of RS*, no. 52/11). Pursuant to Article 68, paragraph 7 of the Law, the Agency engaged an independent chartered auditor to verify the compliance of SMP operators'

regulatory reports with the prescribed manner of the cost-accounting principle implementation. Reports of the independent chartered auditor on the mentioned regulatory reports are available at RATEL's website (http://www.ratel.rs/trziste/izvestaji_revizora.519.html). RATEL examined the pricing of regulated services offered by SMP operators and consistent implementation of the relevant Rulebook.

RATEL passed the decision imposing on Telekom Srbija the obligation to level the price of the monthly IP subscription charge with the price of the direct analogue and primary rate access ISDN monthly subscription charge.

The decision on setting call termination rate on mobile network of the operators Telekom Srbija, Telenor and Vip mobile of October 10, 2017, established a new call termination rate in the amount of 1.43 RSD per minute (VAT excluded), in force as of January 1, 2018.

In 2017, RATEL followed the application of the Decision on gradual reduction in roaming fees, adopted on the basis of the Agreement on the Reduction in Roaming Fees on Public Mobile Communication Networks, signed between Bosnia and Herzegovina, Montenegro, Macedonia and Serbia. As of July 1, 2017, the application of the third and the last phase of reducing the roaming service prices based on the decision began. RATEL, consequently, collected quarterly data and analyzed the effects of the decrease of roaming service prices in the countries signatories of the Agreement. The work of the coordinating body, consisting of the representatives of the regulators from the signatory countries, continued with the meeting held in Sarajevo on May 10, 2017, where experience was shared concerning the implementation of the Agreement and the next steps were discussed in view of the planned amendments to the EU Roaming Regulation. Consequently, RATEL addressed the line ministry with the initiative to sign a new regional agreement regulating roaming prices according to the EU regulations in force as of June 15, 2017.



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USER PROTECTION

The same as in the previous years, RATEL continued to provide support to subscribers and users through daily communication by e-mail and telephone, by resolving complaints concerning the work of electronic communication operators and analysing the number of user complaints according to the type of services.

Subscriber or user, whose complaint was rejected or left unanswered by the operator after 15 days, can turn to RATEL for mediation in an out-of-court dispute resolution. During the mediation in an out-of-court dispute resolution, RATEL has no legal authority to conduct administrative procedure during the proceedings, but can only serve as a mediator in the attempt of a peaceful out-of-court settlement.

The number of new complaint related cases in 2017 was 767, 360 of which were resolved with a positive outcome for the subscriber/user.

The majority of complaints concerned the bills for mobile telephony services and the quality of service, especially of the Internet, whereas other complaints mainly involved number portability between the networks of different electronic communications operators. As for billing complaints, in addition to the complaints concerning standard service charges, many complaints concerned bills for questionable usage of value added services.

When processing user complaints, particular attention is paid to the protection of the rights of the disabled and the elderly, as socially vulnerable groups.

As part of a continuous long-term monitoring of certain electronic communications operators' general acts, RATEL performed the analysis of the general terms and conditions of the electronic communications operator Telenor regarding the service provision on public fixed network and general terms and conditions regarding the service provision on public mobile network, followed by instructions and recommendations given to the operator on how to align the general terms and conditions with the regulations in force.



9

POSTAL SERVICES

As part of the regulatory activities concerning postal market regulation in 2017, RATEL adopted the Rulebook amending the Rulebook on quality parameters for postal service provision and minimum quality for universal postal service provision (*Official Gazette of RS*, no. 98/17). The amendments were adopted due to proposal made by the public postal operator to postpone the application on the grounds that, since the procedure for quality measurement according to the standards is rather complex and comprehensive, additional preparations are required. Full implementation of EN13850 standard is expected in 2019 (continual measurement will not take place in 2017 and 2018, and a two-month measurement will be arranged instead).

At the initiative of the line ministry, RATEL continued to be actively involved in making of the draft of the new Law on Postal Services even after the public consultations, since some changes required additional work of the regulator in order to prepare a national regulatory framework aligned with the postal service directives. RATEL's propositions and suggestions were largely accepted and became the integral part of the proposed law pending parliament adoption.

RATEL participated in preparing draft Law on Ratification of UPU Acts, pending parliament adoption.

During last year, RATEL issued 8 authorizations to postal operators for the provision of express services and courier services, whereas 2 authorizations for the provision of postal commercial services (not belonging to the UPS scope) were revoked.

RATEL's representatives took part in the Grow Postal Statistics - advanced training on data verification, processing and entering, related to collecting and processing of statistical data concerning postal services, organized by Eurostat and supported by the European Commission and the European Statistical System.

During 2017, data submitted by the postal operators were analysed, resulting in an in-depth analysis of the work of the public postal operator and express and courier service operators.

A new reporting form for the operators holding the biggest market share, largely aligned with the requirements of the international institutions (EUROSTAT, ERGP WG, CERP...) was proposed and agreed upon.

During Summer 2017, visits were made to and work meetings were held with the commercial service operators with significant market power BEX EXPRESS DOO, Šabac and AKS EXPRESS KURIR D.O.O, Šabac, where problems encountered by the operators were discussed (mainly due to customs controls and penalties) and activities for future cooperation agreed upon. RATEL organized a meeting with the inspectors from the line ministry regarding these issues in order to find a solution to the reported problems.

RATEL actively supports the work of the Standardization Institute of Serbia in the field of postal services. RATEL's representatives are members of the Commission KS A 331 postal services, a chair and two members. RATEL's representative has been chosen for a member of the Technical Committee CEN - TC 331 Postal Services of the European Committee for Standardization.

The standards that the Commission worked on during 2017 are shown in Table 6, according to the following categories: Standards and related documents introduced in Serbian language, Standards and related documents introduced in English language, Revoked standards and other documents.

Table 6. Introduced and revoked standards and related documents

| Standards and related documents introduced in Serbian language | Standards and related documents introduced in English language | Revoked standards and other documents |
|--|---|---|
| SRPS CEN/TR 16915:2017 SRPS CEN/TS 16819:2017 | SRPS EN 14534:2016/AC2017 SRPS EN 14615:2017 SRPS CEN/TS 17073:2017 | SRPS CEN/TR 14142-2:2013 SRPS CEN/TR 15369:2013. SRPS EN 14615:2008 |

The activities related to the preparation of the original Serbian standard: "Postal Traffic Terms". Work began on preparing SRPS EN 14534 Postal services - Quality of service - Measurement of the transit time of end-to-end services for bulk mail, in Serbian language.

RATEL is active in the working group formed by the Ministry of Public Administration and Local Self-Government concerning the introduction of the National Standard SRPS A.L3.001 of address system - data exchange model, for the purpose of establishing a single national address registry.

Participation in the project TR 36040 "Reengineering of the UPS operator's network with organizational synergy of state and economic resources", financed by the Government of the Republic of Serbia and carried out by the Faculty of Technical Sciences in Novi Sad has also been continued.

RATEL took part in the XXXV Symposium on the new technologies in postal and telecommunications traffic, PosTel 2017, held on December, 5 and 6, 2017, at the Faculty of Transport and Traffic Engineering in Belgrade. At the end of 2017, the work began on the study "Analysis of the impact of gradual liberalization on the postal services market in the Republic of Serbia".

2017 was the third year in a row that RATEL entered the data on the Serbian postal market in the application of the European Commission dedicated to statistical data collection (a work done by EUROSTAT until 2014). All data are available at http://ec.europa.eu/growth/sectors/postal-services/statistics_en. The purpose of this working group is to ensure a single data source to be used as a tool for analysis by all postal data users at a European level. The data are provided by 33 countries (28 EU Member States and another 5 countries, Serbia/RATEL included).

During 2017 cooperation continued with the NRAs from the region, in particular with the Croatian regulator concerning cross-border packages and the Bulgarian regulator regarding the criteria for determining remote areas.



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INFORMATION SECURITY

The Law on Information Security appointed RATEL as the National Centre for the Prevention of Security Risks in ICT Systems (National CERT) of the Republic of Serbia, to coordinate the prevention and protection from security risks in ICT systems at a national level. National CERT shall collect and exchange information on security risks in ICT systems, including events threatening the safety of ICT systems, and inform, warn and advise the entities managing ICT systems and the general public in the Republic of Serbia thereof.

The National CERT is primarily responsible for:

- monitoring national level incidents,
- providing early warnings, alerts and announcements, informing relevant entities about incidents and risks,
- reacting upon reported or otherwise detected incidents, by providing advice, based on available information, to the entities affected by the incident, and undertaking other necessary measures within its competence, based on the received data,
- performing continuous risk and incident analysis,
- raising public awareness among citizens, companies and public administration bodies about the importance of information security and about risks and protection measures, including the organization of dedicated campaigns,
- keeping records of autonomous incident handling teams (Special CERTs).

The Law on Information Security also stipulates that electronic communications operators, considered operators of ICT systems of special importance, are obliged to report all incidents threatening the functionalities of their systems to RATEL. Relevant bylaw adopted by the Government stipulates data reporting form, lists types of incidents and the degree of their relevance and defines the procedure for informing the competent authority about the incidents occurred in ICT systems of special importance.

During 2017, RATEL undertook a number of steps aimed at efficient establishment of the National CERT. In line with the National CERT Feasibility Study completed in 2016, the Information Technology and Cyber Security Division was organized as RATEL's autonomous unit which included the National CERT, with the necessary premises and equipment.

In 2017, RATEL started to cooperate with the competent authority and other bodies recognized as crucial for information security by the Law. In order to build technical, organizational and team capacities, members of the National CERT participated in the

activities related to information security, in Serbia and abroad. RATEL's competencies in this area were presented at events and workshops, and incident response procedures were analyzed and exercised, in line with the Law. The operators of information systems of special importance were invited to present their procedures for implementing the Law on Information Security and incident reporting to RATEL.

RATEL established partnerships with several international institutions and CERTs. As a result, the National CERT was included in the Trusted Introducer's list of CERT teams in November 2017. RATEL, and the National CERT as its part, instantly became the point of contact for receiving incident notifications from international entities and the partner for managing information security incidents in the Republic of Serbia.

The Cyber Security Act governing RATEL's information systems was adopted in February 2017, prescribing the procedures and rules for achieving the required ICT systems security level and measures for preventing and mitigating cyber incidents. The awareness raising campaign related to cyber security was organized for RATEL's employees and competences and responsibilities in managing ICT resources were delegated.

In order to enable the implementation of the prescribed security measures, the CERT team is undergoing permanent capacity building through training, exercises and workshops. During 2017, RATEL's representatives participated in the following cyber security events:

- Workshop „Inter-institutional Cooperation in the Field of Cyber Security» in Vrdnik, Serbia;
- Infotech 2017 conference in Aranđelovac, Serbia - presentation of the paper titled „Protection Policy and Use of ISO 27002 Standard“;
- Multinational exercise „Cyber Tesla 2017“ in Gornji Milanovac, Serbia - participation within the command team, legal team, red team and blue team;
- Cyber exercise „Srbija 2017“ organized by OSCE in Petnica, Serbia;
- Table-top exercise „Protection of the National Non-nuclear Critical Infrastructure“, organized by the Office of the National Security Council and Classified Information Protection in Belgrade, Serbia;
- Scenario preparation for the ATM exercise „CYBER18“, in cooperation with the of Civil Aviation Directorate of the Republic of Serbia and Serbia and Montenegro Air Traffic Services - SMATSA, in Belgrade, Serbia;
- Security Fair in Belgrade, Serbia - moderation of round tables and participation in panels;
- Round table „International Month of Cyber Security - Policy and Practice“, organized by the Chamber of Commerce of the Republic of Serbia and Serbian IT Association in Belgrade, Serbia;
- Scenario preparation for the exercise „ Cyber Tesla 18“, planned for June 2018 in Gornji Milanovac, Serbia.



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COOPERATION WITH OTHER INSTITUTIONS AND ORGANIZATIONS

In carrying out activities from the scope of its responsibility, RATEL cooperated with a number of institutions and organizations. Regular cooperation is maintained with:

- Ministry of Trade, Tourism and Telecommunications, line ministry for the activities in the area of electronic communications, information society and postal services;
- Office for Information Technologies and e-Government;
- Regulatory Authority of Electronic Media;
- Ministry of Interior, Ministry of Defence, Security Information Agency and Serbian Armed Forces;
- Serbian Armed Forces and Serbia and Montenegro Air Traffic Services, regarding radio frequency data used by aircrafts and notifications thereof to the International Telecommunication Union;
- Commission for Protection of Competition;
- Serbian European Integration Office;
- Association of radio-amateurs of the Republic of Serbia, regarding the issuance of licenses for the operation of radio-amateur operators and work licenses of radio-amateur stations;
- the Office for the Coordination of Affairs in the Process of Negotiation with the Provisional Institutions of Self-Government in Priština, regarding implementation of the Action plan for telecommunications;
- Commissioner for information of public importance and personal data protection;
- Republic Geodetic Authority;
- Bodies responsible for space planning and environmental protection and
- other bodies and organizations

In 2017, RATEL has continued to maintain permanent contact and consultations with all stakeholders in the telecommunications and postal sectors: operators, providers, distributors, manufacturer organizations, scientific and educational institutions and users' associations, as well as all postal services stakeholders. Representatives of RATEL have participated in relevant public discussions, panel discussions and round tables, in the effort of reaching professional and objective conclusions to specific and current topics.

With newly acquired competencies in the domain of information security, following the adoption of the Law on Information Security, RATEL started to cooperate with

institutions and organizations which hold authority in this field. RATEL's representatives participate in the meetings of the Coordination Body for Information Security Affairs in the Republic of Serbia, where issues and problems of information security on a national level are discussed. One of the issues discussed and analysed was the biggest cyber attack in 2017 - Wanna Cry.

RATEL has actively participated in the work of WGs engaged in the negotiation process for the EU accession of the Republic of Serbia, for the following negotiation chapters:

1. Chapter 1 – Free Movement of Goods, regarding the regulations pertaining to radio equipment and telecommunications terminal equipment;
2. Chapter 3 – Right of Establishment and Freedom to Provide Services, regarding postal services and markets;
3. Chapter 8 – Competition, in connection with competition in the domain of electronic communications and postal services;
4. Chapter 10 – Information Society and Media, regarding the electronic communications regulatory framework.

During, 2017, RATEL's representatives took part in a number of various meetings, where many papers were presented and results and projects shared. RATEL's representatives organized working visits to telecom and postal operators, in order to better understand the companies' organization, new technical solutions and activity plans, but also to get acquainted with the problems they encounter and the ways they overcome the challenges.

RATEL signed with the Office for Information Technologies and e-Government of the Republic of Serbia the Agreement on Cooperation in the Field of ICT on September 22, 2017. The Agreement is comprehensive and involves administrative, technical, professional and development cooperation. The first tangible result was the e-payment service integration with the electronic issuance of the individual licences for RF usage, enabling electronic payments and tracking of all payments made for this service.

Regarding the cooperation with business entities, permanent communication has been established with the Foreign Investors Council (FIC) Telecommunications Committee in the domain of telecommunications market development, national and European regulation and presentation of future activity plans.

In its work, RATEL also invests in cooperation with educational and scientific and research institutions. In April 2017, an Agreement on business and technical cooperation was signed with the School of Electrical Engineering, Belgrade. The purpose of the agreement is cooperation on scientific, development, expert and educational basis in the field of electronic communications. The cooperation involves knowledge exchange, training internship, participation in the national and international scientific projects, scientific and professional events, using the resources of both institutions, and other modes of cooperation fostering the development of telecommunications in the country.

Agreement on business and technical cooperation was also signed with the School of Technical Science, Novi Sad. The agreement involves cooperation in the field of scientific research, work on scientific projects, specialization and certification of engineers, technical project control and other modes of cooperation of mutual interest.



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INTERNATIONAL ACTIVITIES

Cooperation with international organizations, regulatory authorities and other expert institutions is carried out in the aim of a continuous follow-up of the electronic communications and postal services development, changes in the domain of market regulation and international acts regarding our country, as well as introduction of new services based on new technologies. RATEL carries out international cooperation through its participation in the work of international institutions, organization of bilateral and multilateral meetings with regulatory authorities from other countries, especially from the region and the European Union.

RATEL is a member of REDCA (*Radio Equipment Directive-Compliance Association*), which gathers organizations assessing harmonization of radio equipment, designated bodies, consultant companies, manufacturers and administrations within the EEC and countries signatories of the Agreement on mutual recognition with the EU. The importance of REDCA membership is reflected in the access to important information in the domain of radio equipment and exchange of experience in the application of Radio Equipment Directive 2014/53/EC.

RATEL participates in the work of *Radio Spectrum Policy Group – RSPG*, which represents advisory body on a high expert level, assisting the EC in the development of radio frequency spectrum management policy. Serbia was accepted in this group as an observer, which enables RATEL to follow more closely the European strategy of radio frequency spectrum use in near and far future.

RATEL has continued to participate actively in the work of the *Body of European Regulators for Electronic Communications (BEREC)* and *Independent Regulators Group (IRG)*. RATEL is one of the 37 independent regulatory authorities – members of IRG, whereas in BEREC it has an observer status.

As a regulatory authority, RATEL actively participates in the work of the International Telecommunication Union (ITU), European Conference of Postal and Telecommunications Administration (CEPT) and European Telecommunications Standards Institute (ETSI).

Within ITU, RATEL representatives participated in the work of the group for numbering standardization ITU-T SG2 - Operational Aspects of Service Provision and Telecommunications Management, group for transport networks ITU-T SG15 – Networks, Technologies and Infrastructures for Transport, Access and Home, group for Internet of things and their application ITU-T SG 20 - IoT and its Applications Including Smart Cities and Communities.

As part of the cooperation with CEPT, RATEL takes part in the activities of the Electronic Communications Committee (ECC). In 2017, RATEL representatives participated in the work of group WGFM 22 - Working Group Frequency Management - Monitoring and Enforcement, WG SE - Working Group Spectrum Engineering and Project Team for radio spectrum engineering SE24 - Spectrum Engineering.

In the area of postal services, RATEL participated in the work of the European Regulatory Group for Postal Services' (ERGP). In 2017, RATEL's representatives took part in two working groups meetings held in Bucharest (Romania) and Brussels (Belgium), in March.

RATEL's representatives participated in the work of Contact Network held in May 2017 in Iasi (Romania) and Brussels (Belgium) and in the ERGP Plenary Meetings held in Budapest, in June and in Bonn, in November

BEREC Contact Network (CN) meeting held in Belgrade on September, 14-15, 2017 was hosted by RATEL. BEREC CN discussed current issues concerning European market regulation, Net Neutrality Act, market analysis, NGN development, roaming, amendments to the electronic communications regulatory framework and BEREC's 2018 Work programme and 2018-2020 Strategy. The meeting was attended by over 80 representatives of NRAs from 37 European countries.

The meetings of two ERGP EWGs held in Belgrade on September 19-20, were also hosted by RATEL. One WG - End user satisfaction and monitoring the market outcomes - is preparing a report on key indicators for European postal market monitoring and a report on QoS, user protection and complaints resolution. Another WG - Cost allocation and price regulation - discussed costs of access to postal network and services. The meetings were attended by more than 40 participants.

RATEL hosted an international meeting on the implementation and enforcement of the Radio Equipment Directive (RED), on October 16-17, 2017. Since full application of the Radio Equipment Directive started in June 2017, this posed numerous challenges. In order to discuss the latest topics with the representatives of the relevant authorities from the countries in the region, RATEL hosted the meeting attended by the representatives of the regulatory bodies and state organizations of Albania, Bosnia and Herzegovina, Greece, FYR Macedonia, Slovenia, Serbia, Croatia and Montenegro. The discussions focused on the existing legal and institutional frames in the perspective of placing on the market and usage of radio equipment in the countries of the Southeast Europe, interpretations and clarifications of the application of the Radio Equipment Directive and the possibility of cooperation on a regional level.

During the 33rd BEREC plenary meeting in Copenhagen, the elections were held on December 7, 2017 for Chair 2019 and also for Vice-Chairs for 2018, when Mr. Johannes Gungl CEO Telecommunications at RTR (Austria) will be the Chair.

Director of RATEL, Mr Vladica Tintor, was elected a non-EU Vice-Chair 2018 of IRG and a member of the BEREC mini board for 2018, which participates in the organization of BEREC plenary sessions, expert workshops and workshops for heads. This is the first time that a Serbian representative is a Vice-Chair of the most important European organization in the field of electronic communications, whose work is expected to be particularly challenging in 2018 when the new European Electronic Communications Code (EECC) is expected to be adopted.

At the 52nd Plenary Meeting of European Committee for Postal Regulation, held on June 1-2, 2017 in Madrid, Mr Nikola Trubint, Head of RATEL's Postal Regulation Unit was elected CERP Vice-Chair, for a three-year period.

RATEL also continued to have a good bilateral cooperation with the NRAs from the region and the EU.

Memorandum of Understanding in the field of electronic communications was signed between RATEL and the Hungarian NMHH during BEREC plenary meeting in Bucharest, on October 5, 2017. The cooperation that has so far been focused on technical issues is expected to be further extended.

During the Third Annual International Conference on Antimonopoly Policy: Science, Education, Practice held at Skolkovo Innovation Centre in Moscow, on December 5-6, 2017, Dragan Kovačević, Chairman of RATEL's Managing Board and Mr. Anatoly Golomolzin, Deputy Head of the Federal Antimonopoly Service (FAS Russia), signed the Memorandum of Understanding in the field of electronic communications and postal services regulation. The aim of the Memorandum is to develop and strengthen cooperation in the field of electronic communications and postal services regulation and to create favourable conditions for the development of bilateral relations, based on principles of equality and mutual benefit.

In the area of information security, RATEL's representatives:

- attended the conference on Digital Development – Challenges and Possibilities, organized by the Macedonian AEK in Ohrid,
- participated in the study visit to the Dutch cyber security centre, as part of the project "Supporting Rule of Law by Enhancing Information Assurance Capacities of the Ministry of Interior", in the Hague and Amsterdam,
- participated in the study visit to the Romanian CSIRT/CERT - Regulations and Operational Environment, as part of iPROCEEDS project, in Bucharest,
- participated in the iPROCEEDS Regional workshop on sharing good practices on reporting mechanisms in South-Eastern Europe and Turkey, held in Skopje,
- participated in the CERT team drill „ALERT Cyber drill for Europe and CIS regions“, supported by Regional Cooperation Council (RCC) and held in Kishinev, Moldova.

RATEL hosted the first meeting of the Cooperation Forum of the Regulatory Authorities for Electronic Communications of Bosnia and Herzegovina, Montenegro, FYR Macedonia and Serbia, which was held on November 23, 2017 in the premises of RATEL in Belgrade. The meeting was focused on the exchange of experience and the discussion about the application of regulated prices in regional roaming, prices of international termination, coordination agreements on RF spectrum management and about software for measurement of the quality of service.

The cooperation with the Regional Cooperation Council (RCC) continued, as RATEL's representatives were involved in RCC projects and in the consultations concerning the priority issues of the South East Europe 2020 Strategy.

RATEL's director participated in the meeting of the Subcommittee for Research, Innovation, Information Society and Social Policy within the Committee for the Implementation of the Stabilization and Association Agreement, held in April 2017.



APPENDIX 1

LIST OF BYLAWS

LIST OF BYLAWS WITHIN RATEL'S COMPETENCE (ELECTRONIC COMMUNICATIONS)

- Rulebook on the manner of collection and publication of the data on type, availability and geographic location of the electronic communications network's capacities (*Official Gazette of RS*, no. 66/15)
- Rulebook on content and manner of notification of international interconnection agreements (*Official Gazette of RS*, no. 104/14)
- Rulebook on number portability for services provided via public mobile communications networks (*Official Gazette of RS*, no. 101/14)
- Rulebook on fee calculation for the provision of services within the competence of the Republic Agency for Electronic Communications (*Official Gazette of RS*, no. 34/13)
- Rulebook on the manner of radio frequency usage under general authorization regime (*Official Gazette of RS*, no. 28/13)
- Rulebook on the terms and conditions for access to and usage of the data from a public directory (*Official Gazette of RS*, no. 84/11)
- Rulebook on obligations of value added services provider (*Official Gazette of RS*, nos. 76/11 and 91/11-corr.)
- Rulebook on quality parameters for publicly available electronic communication services and monitoring of electronic communication activity (*Official Gazette of RS*, nos. 73/11 and 3/14)
- Rulebook on the minimum content, level of detail and manner of publication of reference offers (*Official Gazette of RS*, no. 70/11)
- Rulebook on the scope and content of the minimum set of leased lines (*Official Gazette of RS*, no. 70/11)
- Rulebook on the amount of annual fee for the use of numbering (*Official Gazette of RS*, no. 67/11)
- Rulebook on the manner of radio stations usage on the national and foreign aircrafts, locomotives, ships and other vessels (*Official Gazette of RS*, nos. 60/11 and 68/11-corr.)
- Rulebook on the manner of monitoring the radio frequency spectrum usage, technical inspection procedure and protection from harmful interference (*Official Gazette of RS*, nos. 60/11, 35/13 and 16/15)
- Decision on designating relevant markets susceptible to ex-ante regulation (*Official Gazette of RS*, nos. 59/11 and 106/16)
- Rulebook on manner of amateur radio station usage (*Official Gazette of RS*, no. 52/11)
- Rulebook on the application of the cost-accounting principle, separate accounts and reporting of an operator with significant market power in the electronic communications sector (*Official Gazette of RS*, no. 52/11)
- Rulebook on number portability on public telephone networks at a fixed location (*Official Gazette of RS*, no. 52/11)

- Rulebook on general terms and conditions for performing electronic communication activities under general authorization regime (*Official Gazette of RS*, nos. 38/11, 44/11-corr. and 13/14)
- Numbering Plan (*Official Gazette of RS*, nos. 32/11, 35/12, 64/13 and 60/16)
- Rulebook on application form for the issuance of licence for the use of numbering (*Official Gazette of RS*, no. 32/11)
- Rulebook on application forms for the issuance of individual licence for the use of radio-frequencies (*Official Gazette of RS*, nos. 8/11 and 2/14)
- Rulebook on fees for the performance of electronic communications activities (*Official Gazette of RS*, no. 93/10)
- Rules on radio-frequency usage fees (*Official Gazette of RS*, nos. 93/10 and 15/15)
- Statutes of the Republic Agency for Electronic Communications and Postal Services (*Official Gazette of RS*, nos. 125/14 and 30/16)
- Decision on the dynamics of roaming price reduction (adopted on 25.12.2014 by RATEL's Managing Board, available at www.ratel.rs)
- Decision on the manner of keeping registers, records, data bases and other information within the competence of the Republic Agency for Electronic Communications and Postal Services and publishing thereof on RATEL's website (adopted on 29.9.2017 by RATEL's Managing Board, available at www.ratel.rs)
- Decision on designation of operators with the universal service provision obligation (*Official Gazette of RS*, nos. 15/10)

LIST OF BYLAWS WITHIN RATEL'S COMPETENCE (POSTAL SERVICES)

- Rulebook on application form for the issuance of permit for the provision of postal services (*Official Gazette of RS*, no. 65/15)
- Rulebook on quality parameters for the provision of postal services and on the minimum quality standards for the provision of universal postal service (*Official Gazette of RS*, nos. 146/14 and 98/17)
- Rulebook on manner and conditions for the access to the public postal operator's postal network (*Official Gazette of RS*, no. 146/14)
- Rulebook on the methodology of UPS Price Formation (*Official Gazette of RS*, no. 100/11)
- Rulebook on establishment of tariff categories for UPS (*Official Gazette of RS*, nos. 34/10, 58/10, 2/11, 65/11, 21/14 and 83/16)
- Rulebook on requirements for the provision of UPS (*Official Gazette of RS*, no. 28/10)
- Rulebook on general terms and conditions for the provision of postal services (*Official Gazette of RS*, nos. 24/10, 58/10, 2/11, 13/11, 65/11, 93/13 and 97/15)
- Rulebook on establishment of costs for permit issuance and annual fee for the provision of postal services (*Official Gazette of RS*, no. 89/16)

- Decision on establishment of limits per weight and per price for the reserved postal services (*Official Gazette of RS*, no. 9/11)
- Technical requirements for residential mailboxes (*Official Gazette of RS*, nos. 95/10 and 2/16)

LIST OF BYLAWS PASSED BY THE LINE MINISTRY AND THE GOVERNMENT OF THE REPUBLIC OF SERBIA AT RATEL'S PROPOSAL PURSUANT TO LAW ON ELECTRONIC COMMUNICATIONS

- Regulation stipulating the Radio Frequency Band Allocation Plan (*Official Gazette of RS*, no. 99/12)
- Rulebook stipulating the radio frequency allotment plan for work in the 1710-1785/1805-1880 MHz frequency bands (*Official Gazette of RS*, nos. 112/14 and 125/14)
- Rulebook stipulating the allotment radio frequency plan for work in frequency bands 791-821/832-862 MHz (*Official Gazette of RS*, no. 94/14)
- Rulebook on analogue to digital TV programme broadcasting switchover and access to multiplex (*Official Gazette of RS*, nos. 86/14, 18/15, 30/15 and 50/15)
- Rulebook stipulating the Radio Frequency Allocation Plan for public electronic communication service provision – broadband wireless access (BWA) systems, mobile/fixed communication networks (MFCN) in the frequency bands 3400-3600 MHz and 3600-3800 MHz (*Official Gazette of RS*, no. 10/14)
- Rulebook stipulating the Frequency/Location/Area Allocation Plan for terrestrial digital TV broadcasting stations in UHF band for the territory of the Republic of Serbia (*Official Gazette of RS*, no. 73/13)
- Rulebook on radio equipment and telecommunications terminal equipment (*Official Gazette of RS*, no. 11/12)
- Rulebook on Universal Service (*Official Gazette of RS*, no. 24/12)
- Rulebook on requirements in terms of staff, equipment and premises of an undertaking, company or other legal entity authorized for measuring and testing the operation of electronic communications networks and services, associated facilities, electronic communications equipment and terminal equipment (*Official Gazette of RS*, no. 13/12)
- Rulebook on stipulating Radio Frequency/Location Allotment Plan for Terrestrial Analogue FM Broadcasting Stations for the Territory of the Republic of Serbia (*Official Gazette of RS*, no. 102/16)
- Rulebook on the manner and conditions for the determination of the zone of the electronic communications infrastructure and associated facilities, protected areas and obligations of investors during the construction of buildings and premises (*Official Gazette of RS*, no. 16/12)
- Rulebook on the technical and other requirements when building associated infrastructure necessary for installing electronic communication network, associated facilities when constructing commercial and residential buildings (*Official Gazette of RS*, no. 123/12)

LIST OF BYLAWS PASSED BY THE GOVERNMENT OF THE REPUBLIC OF SERBIA, PURSUANT TO LAW ON INFORMATION SECURITY (Official Gazette of RS, nos. 6/16 and 94/17)

- Decision on formation of Coordination Body for Information Security Affairs (*Official Gazette of RS*, nos. 24/16, 53/17, 79/17 and 112/17)
- Ordinance on children security and protection during use of ICT (*Official Gazette of RS*, no. 61/16)
- Ordinance on detailed content of the special importance IC systems security act, manner of verification and content of reports on special importance IC systems security checks (*Official Gazette of RS*, no. 94/16)
- Ordinance on detailed design of special importance IC systems security measures (*Official Gazette of RS*, no. 94/16)
- Ordinance on establishment of the List of jobs in areas where activities of general interest are carried out and where special importance IC systems are used (*Official Gazette of RS*, no. 94/16)
- Ordinance on provision procedure regarding data, lists, types and importance of incidents and information procedure regarding incidents in special importance IC systems (*Official Gazette of RS*, no. 94/16)

LIST OF BYLAWS PASSED BY THE MINISTRY RESPONSIBLE FOR INFORMATION SECURITY, PURSUANT TO LAW ON INFORMATION SECURITY (Official Gazette of RS, nos. 6/16 and 94/17)

- Rulebook on specific requirements for being listed in the Register of autonomous incident handling teams (Special CERTs) (*Official Gazette of RS* no. 12/17).

APPENDIX 2

INDIVIDUAL PERMITS ISSUED FOR RF SPECTRUM USAGE FOR THE PURPOSES OF BROADCASTING SERVICE IN 2017

RADIO SIGNAL COVERAGE – COMMERCIAL SERVICE – NATIONAL COVERAGE

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|--|------------------------------|--------------------|
| 1. | Play Radio d.o.o. Beograd-Zemun | 19 | 0 |
| 2. | Radio difuzno preduzeće "B 92" akcionarsko društvo | 5 | 0 |
| 3. | Društvo sa ograničenom odgovornošću za emitovanje radio programa RADIO HIT FM BEOGRAD-Vračar | 3 | 0 |
| 4. | PRIVREDNO DRUŠTVO ZA PROIZVODNJU I EMITOVANJE RTV PROGRAMA INDEX DOO BEOGRAD | 1 | 0 |

RADIO SIGNAL COVERAGE – COMMERCIAL SERVICE – REGIONAL COVERAGE

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|---|------------------------------|--------------------|
| 1. | INFORMATIVNI I MARKENTIŠKI CENTAR LUNA PRESS DOO UŽICE | 2 | 4 |
| 2. | DRUŠTVO ZA PROIZVODNJU, PROMET I USLUGE MARTEKS TMT DOO LOZNICA | 4 | 0 |
| 3. | PREDUZEĆE ZA RADIO DIFUZNU DELATNOST I PRUŽANJE USLUGA TDI RADIO TELEVIZIJA DOO, BEOGRAD (VRAČAR) | 1 | 0 |
| 4. | RTV M DOO KNJAŽEVAC | 1 | 0 |
| 5. | AVALON DOO ZA PROIZVODNJU I TRGOVINU, ODŽACI/Sombor, MEDIJSKI CENTAR BLUE DOO SOMBOR, Trg Svetog Trojstva 1 | 3 | 0 |
| 6. | Privredno društvo RADIO-TELEVIZIJA KRAGUJEVAC doo Kragujevac | 3 | 0 |

RADIO SIGNAL COVERAGE – COMMERCIAL SERVICE – REGIONAL COVERAGE (BELGRADE)

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|--|------------------------------|--------------------|
| 1. | RADIO JAT DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU ZA RADIODIFUZIJU BEOGRAD (VRAČAR) | 1 | 0 |
| 2. | BUM BUM 2007 DOO BEOGRAD | 1 | 0 |
| 3. | DRUŠTVO ZA RADIOTELEVIZIJSKU DELATNOST, MARKETING I KONSALTING RTV CENTAR DOO BEOGRAD (PALILULA) | 1 | 2 |
| 4. | Srpska pravoslavna crkva - Arhiepiskopija beogradsko-karlovačka | 1 | 2 |

RADIO SIGNAL COVERAGE – COMMERCIAL SERVICE – LOCAL COVERAGE

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|---|------------------------------|--------------------|
| 1. | Udruženje "RTV BUM018" | 1 | 0 |
| 2. | JAVNO PREDUZEĆE ZA INFORMATIVNU DELATNOST RADIO-TELEVIZIJA OPŠTINE KOVAČICA, KOVAČICA | 1 | 0 |
| 3. | May Media doo Aleksinac | 1 | 0 |
| 4. | RADIO I TELEVIZIJA KANAL-M, DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU, PARAĆIN | 1 | 0 |
| 5. | PRIVREDNO DRUŠTVO SREMSKI RADIO DOO ŠID | 1 | 0 |
| 6. | DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU RADIO 014 VALJEVO | 1 | 0 |
| 7. | DAK PREDUZEĆE ZA RADIO-TELEVIZIJU I DRUGE DELATNOSTI DOO ČUPRIJA | 1 | 0 |
| 8. | DRUŠTVO ZA RADIO I DIFUZIJU TIM RADIO DOO PRNJAVOR | 1 | 0 |
| 9. | DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU RADIO HOMOLJE ŽAGUBICA | 1 | 0 |
| 10. | ANI PRESS DOO PIROT | 1 | 2 |
| 11. | PREDUZEĆE ZA RADIODIFUZNU DELATNOST TODOROVIĆ I DRUGI DOO, LOZOVIK | 1 | 0 |
| 12. | SPA 106 DUŠKO ĐUKIĆ PR KOSJERIĆ (VAROŠ) | 1 | 0 |
| 13. | Ivanjički radio DOO, Ivanjica | 1 | 0 |
| 14. | RADIO BAČKA DOO BAČ | 1 | 0 |
| 15. | RADIO TV PODRINJE D.O.O. LOZNICA | 1 | 0 |
| 16. | TRGOVINSKO INFORMATIVNO PREDUZEĆE DOUBLE E DOO NOVI PAZAR | 1 | 2 |
| 17. | PRIVREDNO DRUŠTVO ZA RADIO DIFUZIJU HIT DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU POŽAREVAC | 1 | 2 |
| 18. | MEDIJSKI CENTAR RADIO KOMETA-KLIK d.o.o. BOR | 1 | 0 |
| 19. | PRIVREDNO DRUŠTVO BRAVO DOO, POŽAREVAC | 1 | 2 |
| 20. | RADIO SUBOTICA - SZABADKAI RADIO DOO SUBOTICA | 1 | 0 |
| 21. | DRUŠTVO ZA RADIO I DIFUZIJU TIM RADIO DOO PRNJAVOR | 1 | 0 |
| 22. | ATOM-ZONA DOO RAZBOJNA | 1 | 0 |
| 23. | PREDUZEĆE AGRO-PRESS DOO GREDETIN | 1 | 0 |
| 24. | Eparhija niška Srpske pravoslavne crkve | 1 | 0 |
| 25. | PROIZVODNO USLUŽNO PREDUZEĆE BIS-KOMERC DOO BEOGRAD | 1 | 0 |
| 26. | DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU RADIO ČAČAK ČAČAK | 1 | 0 |

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|--|------------------------------|--------------------|
| 27. | INFORMATIVNI CENTAR DOO PRIBOJ | 1 | 0 |
| 28. | PREDUZEĆE ZA RADIO I TELEVIJSKE AKTIVNOSTI RTV SVRLJIG DOO SVRLJIG | 1 | 0 |
| 29. | RADIO MEDVEĀA DOO MEDVEĀA | 1 | 2 |
| 30. | Udruženje građana "FORMA PLUS" | 1 | 0 |
| 31. | RADIO BISER DOO PRIVREDNO DRUŠTVO ZA SAOBRAĆAJ TRGOVINU IZDAVAŠTVO I RADIO I TELEVIJSKE AKTIVNOSTI POŽAREVAC | 1 | 0 |
| 32. | PRIVREDNO DRUŠTVO SA OGRANIČENOM ODGOVORNOŠĆU RADIO-ANTENA VRŠAC | 2 | 2 |
| 33. | DOO RTV. EKOS-LE VLASOTINCE | 1 | 0 |
| 34. | RADIO TELEVIZIJA KURŠUM DOO KURŠUMLIJA | 1 | 0 |
| 35. | PRIVREDNO DRUŠTVO ZA PROIZVODNJU, PROMET I USLUGE DELFIN MARKETING DOO, ZLATIBOR | 1 | 0 |
| 36. | RADIO I TELEVIZIJA TRSTENIK DOO TRSTENIK | 1 | 0 |
| 37. | DOO RADIO 9 KRAGUJEVAC | 1 | 0 |
| 38. | EPARHIJA BAČKA SPC-CRKVENA OPŠTINA BAČKA PALANKA | 0 | 2 |
| 39. | RADIO-VLADIMIRCI DOO VLADIMIRCI | 0 | 2 |
| 40. | BC INFO d.o.o. Bela Crkva | 0 | 2 |

DIGITAL TV SIGNAL COVERAGE – NATIONAL COVERAGE

| Ord. no. | Name and seat of the radio station owner | Broadcasting station permits | RR station permits |
|----------|--|------------------------------|--------------------|
| 1. | JAVNO PREDUZEĆE EMISIONA TEHNIKA I VEZE BEOGRAD (ČUKARICA) | 43 | 28 |

APPENDIX 3

OVERVIEW OF REGISTERED OPERATORS

Pursuant to the Law, RATEL is required to keep operator register/records, which is implemented in accordance with the Decision on the manner of keeping registers, records, data bases and other information within the competence of the Republic Agency for Electronic Communications and Postal Services and publishing thereof on RATEL's website.

Table 1. Number of operators of electronic communications services on 31.12.2017.

| Service | Registered operators |
|---------------------------------------|----------------------|
| Public voice service | 41 |
| VoIP (Voice Over IP) | 32 |
| Internet access and Internet services | 194 |
| Media content distribution | 80 |
| SMS/MMS transmission | 17 |
| VAS (value added service) | 51 |
| Data transfer | 18 |
| Leased network resources | 22 |
| Leased infrastructure | 30 |
| Broadcasting and multiplexing | 1 |
| Directory | 1 |
| Other services | 3 |

Table 2. Number of operators of electronic communications networks on 31.12.2017.

| Network | Registered operators |
|--|----------------------|
| GSM mobile network | 3 |
| UMTS mobile network | 3 |
| LTE mobile network | 3 |
| PSTN (public switched telephone network) | 3 |
| CDMA network | 2 |
| Cable access network | 95 |
| Radio relay transport network | 12 |
| OTN (optical transport network) | 33 |
| Passive infrastructure | 41 |
| BFWA (Broadband Fixed Wireless Access) | 56 |
| WAS/RLAN (Wireless Local Area Network) | 103 |
| SM (satellite network) | 1 |
| RR - radio relay (72-76GHz) | 1 |
| Other fixed networks | 1 |

In addition to updating the existing records and creating new ones, there were 155 changes (89 new entries and 66 deletions) made to the register of operators – providers of electronic communications, during 2017:

- 13 new entries and 3 deletions for public voice service;
- 5 new entries and 8 deletions for media content distribution service;
- 2 new entries and 5 deletions for VoIP services;
- 11 new entries and 12 deletions for Internet access and Internet services;
- 0 new entries and 1 deletion for data transmission;
- 6 new entries and 8 deletions for VAS (voice transmission, SMS, MMS);
- 4 new entries and 1 deletion for leased infrastructure;
- 4 new entries and 2 deletions for leased electronic communications network resources;
- 0 new entries and 4 deletions for message transmission (SMS, MMS);
- 1 new entry and 2 deletions for passive infrastructure;
- 3 new entries and 4 deletions for optical transport network;
- 8 new entries and 8 deletions for cable access network;
- 13 new entries and 3 deletions for BFWA (Broadband Fixed Wireless Access) network;
- 18 new entries and 5 deletions for WAS/RLAN (Wireless Local Area Networks)



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