

Spectrum Management

Radio Spectrum: A Scarce National Resource



About the TRA

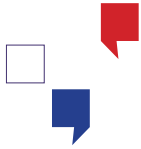
The Telecommunications Regulatory Authority of Lebanon (TRA) is an independent public institution established by Law 431/2002. It is legally mandated to liberalize, regulate, and develop telecommunications in Lebanon, and to protect telecommunications consumers' rights.

The TRA's mission is to establish a regulatory environment that enables a competitive telecommunications market to deliver state-of-the-art services at affordable prices to the broadest spectrum of the Lebanese population.

This is a TRA guide related to Spectrum Management.



SPECTRUM OVERVIEW



Radio spectrum is a set of electromagnetic waves that move through space at different frequencies and enable the transmission of voice, data and images.

RADIO SPECTRUM

Spectrum is a scarce national resource. As such, its effective management is important to the country. It includes mobile communications services, broadcasting, radio navigation, maritime and aeronautical radio, public safety and distress operations, radio location and amateur radio, and so on.

The key characteristics of spectrum are related to the propagation features and the amount of information that signals can carry. The effective use of spectrum can make a big difference to a country's prosperity, especially where communications are heavily reliant upon wireless technologies such as mobile networks.



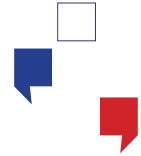
One of the TRA's key legislative duties is to ensure the optimal and efficient use of radio spectrum, which is a national resource and a major asset to Lebanon that contributes to the economic development of the country.



The TRA is responsible for developing the policies, rules and regulations for the assignment, monitoring and management of radio frequency spectrum. In assigning frequencies, the TRA aims for the efficient usage of spectrum, while accommodating government and civil needs and supporting new technologies and emergency communications. Any decision to change frequencies currently in use, relies on changes in international agreements, national spectrum plans, forecasted demand, timing issues and implications for users.



SPECTRUM: A SCARCE RESOURCE



Spectrum is a national scarce resource. As such, its effective management is important to the country.

If the spectrum is to be used efficiently, its use must be coordinated and regulated through both national regulations and the Radio Regulations of the International Telecommunication Union (ITU). The objective of spectrum management is to maximize the value that society gains from the radio spectrum by allowing as many efficient users as possible while ensuring that the interference between different operators remains manageable.

The TRA sought to systematize the management of spectrum resources by building databases and instituting monitoring mechanisms to ensure compliance with international and national regulations and licenses conditions. These efforts were also geared at curtailing demand by promoting the most valuable usages of the spectrum.



DATA COLLECTION

The TRA developed and issued a request for information (RFI) to build a centralized database on spectrum usage and occupancy. The RFI sought detailed information to manage and maintain efficient spectrum usage in Lebanon, resolve interference issues, and initiate coordination with the International Telecommunication Union and neighboring countries. The results of the RFI helped in deciding on possible reassignments and in assessing what it takes to clear segments of occupied bands.

Sending a detailed request for information to all known or listed spectrum users was followed up with meetings and workshops held at the TRA to clarify the need and importance of accurate data collection. The TRA requested and collected detailed technical data from: MoT/Ogero, mobile operators, TVs and FM broadcasters, Data Service Providers, and government entities.

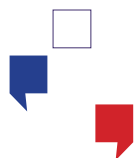


DEVELOPMENT OF THE SPECTRUM DATABASE

The TRA created the spectrum database to keep track of all spectrum usage and authorization across the country. This database has helped create a uniformed data structure to enhance frequency licensing processes and to assess the demand for different frequency bands and different radio services.



SPECTRUM MANAGEMENT ACTIVITIES: STRATEGIC AND REGULATORY PROJECTS



Since its inception, the TRA focused on all major aspects of spectrum and worked on strategic and regulatory projects to ensure the efficient management of spectrum.

LEBANESE NATIONAL FREQUENCY ALLOCATION TABLE (LNFT)

The Authority's goal is to manage spectrum usage while taking into account international standards and the needs of the public and private sectors. The TRA also aims at stimulating technological innovation and competitiveness. The LNFT divides Lebanon's radio frequency spectrum into a number of frequency bands and specifies the general usages of the bands and when they may be used. The publication of the LNFT is a milestone in the efficient use of the spectrum. It provides transparency to users, equipment manufacturers and the industry at large. The TRA expects it to play a major role in interference reduction. The LNFT will be updated as necessary to accommodate international initiatives and national decisions.

SPECTRUM MANAGEMENT AND LICENSING DRAFT REGULATION

The Spectrum Management and Licensing Draft Regulation is a key regulatory instrument that provides transparency and clarity of the TRA's role in the management and licensing of the radio frequency spectrum as well as on the procedures to be adopted by the TRA for the allocation of frequencies for all types of licenses. The regulation also ensures a fair, efficient, and transparent process for the licensing of radio frequencies to Service Providers in line with international best practices and the mandate through Telecom Law 431/2002.



LICENSING GUIDELINES FOR DIFFERENT RADIO SERVICES

In addition to the general regulatory aspects, the TRA worked on drafting licensing guidelines for the different radio services including private land mobile radio, maritime and aeronautical radio services, amateur, fixed and satellite services. The proposed channeling plan and radio interface specifications were assessed as per their compliance with the latest ITU recommendations. Accordingly, application forms and licenses for these services have been developed.

OPINION FOR DETERMINING SPECTRUM RIGHT TO USE FEES

The Authority developed an Opinion for Determining Spectrum Right to Use (RTU) fees, which is an important document for setting the policy framework of spectrum RTU fees in the broadband and mobile sectors. The Authority has also prepared the necessary draft decree along with the reasoning behind it to set the fees and submitted them to the Minister of Telecommunications for proposal to, and issuance by, the Council of Ministers.

The framework would ensure a fair return to the public for the private use of a public asset and would institute a discipline on the usage of scarce spectrum bands, all while establishing transparent allocation protocols.





THE DIGITAL MIGRATION STRATEGY FOR TV BROADCASTING PLAN

The TRA completed a number of initiatives in the broadcasting sector (public consultation, workshops, internal taskforces,...) and developed a draft Digital Migration Plan for TV Broadcasting, from analog to digital, compatible with the Geneva 2006 agreement. This agreement coordinates the allocation of frequencies for Digital TV broadcasting in Europe, the Middle East and Africa, in order to prevent harmful cross-border interference. The TRA also evaluated the wireless and cable distribution status in Lebanon and made recommendations accordingly.

Digital TV technology allows more efficient use of the frequency spectrum, the transmission of a larger variety of programs, and the introduction of new services such as “High Definition Television”, which delivers a sharper, more clearly defined picture to viewers especially as users adopt the large TV screens.

IMPROVING FM FREQUENCY BROADCASTING PLAN

The TRA’s “Improving FM Frequency Broadcasting” paper aims at improving the quality of FM Broadcasting by enhancing the coverage and reducing interference and recommends ways in which the FM Broadcasting in the 87.5-107.9 MHz band can be allocated and improved.



HUMAN ELECTROMAGNETIC FIELD (EMF) EXPOSURE LIMIT REGULATION

Article 23 in the Telecommunications Law 431/2002 states that the Authority is responsible for setting the standards and the technical requirements of telecommunications equipment in order to prevent harm to networks and hazards to public health and safety.

The TRA issued the Human EMF Exposure Limit Regulation that is in line with the recommendations of the International Commission of Non-Ionizing Radiation Protection (ICNIRP) adopted by the World Health Organization and the International Telecommunication Union.

The purpose of the Human EMF Exposure Limit Regulation is to set national limits for the level of EMF exposure in order to protect the public and labor force from potential health effects of man-made non-ionizing radio frequencies in living and working environments.

REGULATORY GUIDELINES FOR THE USE OF THE 2.4 AND 5 GHZ BAND FOR WLAN/RLAN IN LEBANON

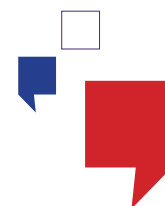
Given the development of services and the increase in the availability of equipment operating in the 2.4 GHz and 5 GHz bands and following requests from service providers and the public for using these bands for Internet access applications, the TRA worked on drafting “Regulatory Guidelines for the use of the 2.4 and 5 GHz band for WLAN/RLAN in Lebanon”.

The purpose of this set of guidelines is to harmonize the usage of frequency bands and set up technical and operational parameters in order to ensure co-existence with other services in these bands.



SPECTRUM MANAGEMENT ACTIVITIES: INTERNATIONAL AND REGIONAL ROLE

The TRA is involved in major activities at the international and regional levels to ensure the efficient management of spectrum.



INTERNATIONAL AND REGIONAL ACTIVITIES

- Plan and manage the utilization of the spectrum resources in accordance with both national and international legislation.
- Represent and promote the Lebanese position with regard to all radio services in the relevant international fora, at both a regional (ASMG) and Global level, within the CEPT and ITU.
- Ensure compliance with international agreements on frequency usage and technical standards as a requirement for spectrum access, recognizing that these agreements are necessary for system operation, efficient spectrum management, spectrum utilization, compatibility, competitiveness and avoidance of interference.
- Consult regularly and widely on spectrum issues to benefit from industry and other stakeholders' views when making decisions.
- Work to protect Lebanon's national interests while harmonizing and coordinating spectrum utilization with other countries and regional and international organizations.
- Participate in the various study groups of the ITU's radio communication sector related to the use of the radio frequency spectrum, the WRC preparation and the revision of the Radio Regulations.
- Participate in international standardization and regulatory organizations.
- Participate in international planning conferences and ITU technical meetings.
- Interface with ITU on frequency registration and coordination matters.



SPECTRUM CONTROL AND INTERFERENCE MANAGEMENT

With more and more users and services going wireless, spectrum management becomes crucial to avoid interference.



CONTROL AND INSPECTION

As part of its mission to inspect and monitor the market, the TRA established a procedure with Lebanon's Internal Security Forces (ISF) in order to conduct investigations and implement coercive measures against any person/entity committing a violation of Telecommunications Law 431/2002. Implementing this procedure, on-site investigations have been undertaken by the TRA and the ISF. The minutes drawn up during the investigations and attestation of violations are forwarded to the Public Prosecutor. Complaints and reports of violations addressed to the TRA are also forwarded to the Public Prosecutor.



SPECTRUM INTERFERENCE

The TRA, with the support of the ISF-Cybercrime and Intellectual Property Protection Bureau at the Ministry of Interior, undertakes regularly field detection efforts in several areas in Lebanon to identify sources of interference on the frequencies of cellular networks and service provider networks. Interference sites have been identified in Beirut and many other regions in Lebanon, and on the main road leading to Beirut International Airport, where the devices causing interference have been confiscated.

The TRA has also carried out field and monitoring investigations, including site inspections, in response to interference complaints from the radio-communications systems affiliated with Beirut International Airport; it has also resolved and followed up on cross-border interference issues with Turkey, Jordan, and Syria.

The TRA, also, receives regularly and responds to complaints from licensed Service Providers regarding interference that impairs the quality of service.

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