

# Satellite Communication and Space Law

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## **I. Introduction**

The use of radio frequencies was informed to the ITU for inclusion in a list of Frequencies before 1947. But there was no being used free from harmful interference and in accordance with the internationally agreed Table of Frequency Allocations.

The Radio Regulations are administrative regulations which supplement the International Telecommunication Constitution and Convention which is an international treaty entered into by sovereign states. Therefore, Radio Regulations also have the force of an international treaty and should from the minimum essential element of national law of each Member state in

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respect of the use of radiocommunications.

The International Frequency Registration Board(IFRB), as required under the Radio Regulations receives about 1200 notices per week that must be examined to ensure their conformity with the applicable regulations.

The present system of international management of the radio frequency spectrum and the geostationary orbit stands on four points ;

- 1) the compliance with the Table of Frequency Allocations and the other provisions of the Radio Regulations ;
- 2) procedures of obtaining coordination or agreements of other administrations
- 3) notification, publication recording of frequency assignments in the Master Register ;
- 4) the increasing role of an independent impartial collegiate body which has the task of determining compliance with the provisions of the Radio Regulations.

Past 40 years, ITU World/Regional Administrative Conferences(WARCs, RARCs) have modified the regulations for different frequency bands and services, new methods and concepts as well as new services have been added to the international frequency management regulations. However, the main principles have been kept and one may at present note that, while the selection and assignment of the frequencies to radio stations or networks remains the sovereign right and individual task of the national administrations, this choice is not only limited by technical possibilities of sharing between frequencies simultaneously used by different radio stations, but the administration have also to cooperate on an international level to find solutions through agreements and compromises. The national assignment of frequencies is carried out in the framework of mutually accepted international regulations which are based on :

- 1) frequency band allocations to services,
- 2) the protection of assignments recorded in teh Master Internationaal Ferequency Register or the previous planning of portions of the frequency spectrum ;

- 3) bilateral or multilateral agreements and coordination.

## II. Existing regulatory systems

The current system, based on the regulations established in the days of High Frequency radiocommunications. The system, even though it is not uniform code of international frequency management : 1) guarantees, in general, the harmful interference-free operation of radio stations for which the corresponding procedures have been applied by giving international recognition or protection ; 2) provides a mechanism for international coordination of those radio networks including satellite networks for which the high initial investment requires pre-operational agreements between users of the systems ; 3) enables countries to accede to spectrum for future utilization, equitable access to the spectrum and the geostationary satellite orbit guaranteed through frequency plans.

The main inconvenience of the current system is that it does not lead necessarily to an efficient and economical spectrum use. The main problem areas are the following : 1) the method of frequency or channel allotment or assignment in frequency plans may no longer be considered an efficient use of the spectrum ; the plans are based on the technology known when the plan was adopted and the procedures often do not provide for any updating of the technical criteria. As an example, the Plan for broadcasting satellite service in the 12GHz band for Regions 1 and 3 was developed at the 1977 WARC and was based on the technology and expressed needs of the 1975-77 period. The technology in the application of the procedures ; 2) the administrative procedures of the Radio Regulations are very detailed, very complex, and with many cross references to other Articles and other provisions in the same Article.

The future regulatory approach should provide some improvements for these problems.

### III. Future reforms in the regulations

One of the major areas of complexity is the method of frequency allocation. The main questions are the following : 1) allocations are too complex and confusing. The originally simple allocation have become very complex with over 500 footnotes providing either exceptions, additional allocations, alternative allocations or a different category of allocation to the main table or specifying conditions of use ; 2) the emergence of new techniques or requirements blurs the previous boundaries between services(e. g. fixed-satellite service and broadcasting-satellite services) ; in some areas there have been radical changes in the requirements of services on the basis of which the frequency allocations were established by conferences convened for allocation purposes e. g. mobile-satellite spectrum requirements seem to exceed the forecast taken into account when the allocations around 1.5/ 1.6 GHz were updated in 1987.

These examples indicates need for a detailed revision of the concept and approach of making frequency allocations for radio services. One possible improvement to the Table of Frequency Allocations is the merging of different services e. g. : 1) merging fixed-satellite and broadcasting-satellite services into a "fixed-and-distribution satellite service", 2) merging all mobile-satellite services including its sub-services(e.g. land mobile-satellite service) into a single mobile-satellite service, and making the allocations to the more generic mobile-satellite service.

This would reduce the number of different services to be allocated, and in addition, it would provide much greater flexibility to the users of the spectrum, wherever the need for such flexibility becomes apparent. As an example the INMARSAT system as well as a number of national mobile satellite systems are and will use multipurpose satellites. In addition, the detailed allocation may put additional restrictions of the coordination of the use of the frequencies among different networks.

While being of the opinion that many of the radio regulatory procedures have made a positive contribution to the interference-free frequency use

and efficient spectrum management, one could admit that many of these procedures have become extremely complex. Some procedures may be simplified or even suppressed without much harm. The other aspect that needs to be addressed, is the question of whether the international Radio Regulations should be based on the more formal legalistic approach where individual usage is examined by an independent Board and a formal finding given as to whether the usage is in conformity with the regulations or whether a more cooperative approach is to be used which would have an independent body such as the IFRB record usage and provide assistance to administrations to resolve bilateral or multilateral problems.

Within the Radio Regulations, there are four major groups of procedures governing the use of radio frequencies by space stations pertaining to :

- 1) broadcasting satellite networks in the 12GHz plans and their associated feeder links in the 14/17 GHz bands ;
- 2) Fixed Satellite Service Allotment Plan developed by the 1988 WARC using some of the 4/6 and 11/13 GHz band frequencies ;
- 3) fixed satellite service subject to simplified procedures and Multilateral Planning Meetings ;
- 4) all other space services in the other bands.

There are four groups of procedures for space service in the Radio Regulations. In each of these procedures, which are complex individually, there are many steps, each with specified time periods. In the case of multi-service satellite systems, an administration and the IFRB are faced with applying, for the same multiservice satellite, three or four separate sets of procedures.

A possible approach for the simplification of the procedures for the space services would be to have a single set of administrative procedures dealing with the major steps, which would be applicable to all space services. Associated with this, there could be a technical annex which would include the technical criteria to be used to identify which services or stations of the other administrations would be affected. The administration would send the proposed network characteristics to IFRB. This first step and the associated administrative procedures could be the same for all space services. This procedural step would apply equally to cases where there is no frequen-

ncy plan, or in some cases to use frequencies and orbital positions differently from those specified by the plan. The step of notification for recording would be the same for all satellite services. It would have to cover certain eventualities such as the case where an agreement cannot be reached.

#### **IV. Restructuring of ITU and Regulatory Systems**

The 1989 ITU Plenipotentiary Conference decided to establish a High Level Committee(HLC) of 21 experts from administration to review the structure and functioning of the ITU. This Committee made a report "Tomorrow's ITU: The Challenges of Change in 1991. It would be useful to mention about some key recommendations which relate to the management of the radio frequency spectrum. As mentioned earlier, the present Board of the IFRB consists of 5 individuals elected by the Plenipotentiary Conference and this 5 person permanent Board is responsible not only for the administration and interpretation of the Radio Regulations, but it is also responsible for the day-to-day management of the IFRB secretariat. HLC has recommended that these two separate functions of the existing Board be separated with a 9 member Part Time Radio Regulations Board having the responsibility for the interpretation of the Radio Regulations, and a secretariat headed by an elected Director who would be responsible for the day-to-day operation of the secretariat and for the issuance of all findings that do not require any additional interpretations. Restructuring of the ITU, with modifying International Telecommunication Constitution and Convention, including Radio Regulation Board at the Additional Plenipotentiary Conference in December 1992.

The other major activity in the ITU on the regulatory front is the creation of a Voluntary Group of Experts to deal with the simplification of the Radio Regulations. The need for this simplification was recognized by the Nice Plenipotentiary Conference which requested the Council to establish the group. It will arrive at some recommendations that could result in significant simplification of the Radio Regulations near future, possibly 1995/ 1996.

## **V. Conclusion**

In the above consideration I tried to identify some basic aspects of the present international regulatory framework for frequency spectrum and geostationary orbit and then provide some comments for the changes in satellite systems. The purpose of this is to discuss a new framework to be developed which is more responsive to today's changing environment. These suggestions could bring a significant simplification of the procedures for the use of satellite services in both developed and developing countries.