**THE INTERNATIONAL TELECOMMUNICATION UNION, ITU**

The International Telecommunication Union (ITU for short) is a specialized agency of the United Nations, UN, international organization is the world's oldest (dating back to 1,865) and was incorporated into the UN in 1946. It is the world reference body for the sector and the Telecommunications Industry. Headquartered in Geneva, Switzerland, bringing together 192 member states (i.e. governments). Additionally, it has more than 900 sector members and associates, eg, companies, NGOs, Universities and R & D strategy.

The ITU is governed by their basic legal instruments, configured as international treaties and therefore binding on all signatory States. These legal instruments are:

1. The Constitution of the International Telecommunication Union
2. The Convention of the International Telecommunication Union
3. The Administrative Regulations governing the use of Telecommunications:
	1. International Telecommunication Regulations, RTI
	2. the Radio Regulations, RR (including the Rules of Procedure)
4. The Optional Protocol on the Compulsory Settlement of Disputes Relating to the Constitution, Convention and Administrative Regulations

These legal instruments are reviewed periodically, usually every 4 years, specializing in global conferences. In such conferences all members have a seat (member states or associate members), but only those countries have a say in them. The respective conferences where we review the legal instruments are:

1. Constitution and Convention (and Protocol) in the Plenipotentiary Conference, PP. The latter were made in November 2006 in Antalya, Turkey (PP'06), and Guadalajara, Mexico in October 2010 (PP'10). The next will be in Busan, Korea in 2014.

2. International Telecommunication Regulations, RTI: World Conference on International Telecommunications, WCIT. A note that the last was in 1988, since which is not reviewed this regulation. Indeed, during the PP06 was agreed to advance a new WCIT, was recently held in December 2012 in Dubai, United Arab Emirates.

3. Radio Regulations, RR: The World Radiocommunication Conference, WRC. It takes place every 3 or 4 years. The most recent was in November 2007 (CMR'07) and in January 2012 (CMR'12) both in Geneva, Switzerland (CMR-012). The next will take place in 2015, also in Geneva (CMR'15), also scheduled the meeting of 2018 (CMR'18).

These conferences hold sessions in the 6 official languages of the United Nations, ONU.

As for the hierarchical structure of the ITU, this conforms to your order:

1. Council consists of 46 administrations are meeting once a year.

2. Secretary General

3. Assistant Secretary Genera

4. Sectoral Office Directors:

a. Standardization, ITU-T

b. Radio, ITU-R

c. Development, ITU-D

Both board members and the positions of Secretary, Assistant Secretary and Office Directors are elected by ballot at each Plenipotentiary Conference. Each office has an advisory group, which meets annually, so open to all levels of government, is responsible for its Study, CE, each with its various working groups, WG, which analyze the most relevant to each sector, through a series of "Issues", whose results are reflected in Recommendations and Reports sector, known as "standards" ITU-T, ITU-R, ITU-D respectively. These standards are recommendatory and not binding on member states, and thus act more as a reference for the sector. However, special care should be paid to the rules "incorporated by reference", since in that case, become part of the relevant regulation (which is an international treaty).

The WG will meet every six months (exceptionally 3 times a year) meetings typically last 10 days, and hold sessions in English only. The EC will meet annually, for 2 days after the conclusion of the meetings of their respective GT (usually just after the last meeting of the WP), hold sessions in the 6 official UN languages.

These meetings are underway in the ITU headquarters in Geneva, Switzerland (exceptionally, to requests from governments, can advance at different sites).

**2. Radio Sector (ITU-R)**

In accordance with the mandates of the Constitution of the ITU, its Radiocommunication Sector (ITU-R) tending towards international collaboration in order to ensure rational, equitable, efficient and economical use of radio frequency spectrum and orbits satellites, by:

1 - The celebration of World and Regional Radiocommunication to expand and adopt Radio Regulations and Regional Agreements on the use of radio spectrum

2 - The development of ITU-R, developed by the study (EC) Radio in the framework established by the Assemblies, on the technical characteristics and operational procedures of the services and radio systems

3 - Coordination of efforts to eliminate harmful interference between radio stations of different countries

4 - Updating the Master International Frequency Register

5 - The establishment of mechanisms, providing information and seminars to contribute to the management of radio spectrum nationally

To support these mandates, the ITU-R has an international legal framework of reference, which is the Radio Regulations and Rules of Procedure, also is responsible for the Recommendations and ITU-R reports and associated manuals. These elements will be detailed later.

To fulfill the obligations under the RR, Radio Sector of ITU, ITU-R is structured as illustrated in Figure 1

Below are each of the upper units diagram governing Radio Office (BR)

**2.1. World Radiocommunication Conference, WRC (World Radio Conferences, WRC)**

Its main objective is the complete and detailed review of the Radio Regulations RR (Radio Rules, RR), and its Rules of Procedure, RoP (Rules of Procedure, RoP), in order to keep them updated considering technological developments on Spectrum Radio and sectoral realities and challenges, so that it can respond early and appropriately to these changes. For this, the WRC have the authority to modify the RR by addenda, modifications or deletions they deem pertinent. These modifications are made by consensus, and only if necessary, would vote (one vote administrations).

In this sense, The WRC can:

1 - To consider any radiocommunication matter of worldwide character

2 - Develop instructions to the Radio Regulations Board and the Radiocommunication Bureau, and review their activities

3 - Determine the issues under consideration by the Radiocommunication Assembly and Study as part of the preparatory work for WRC future

4 - Set the agenda for the next WRC, and the subsequent draft.

WRCs are normally made in Geneva, Switzerland, with a typical duration of 4 weeks. As discussed above, the last WRC dates from last February in Geneva, Switzerland (CMR'12), and the next will be held in 2015 (CMR'15). During these periods, preparatory meetings are held, typically two, a week after the WRC, and another 6 months before the new CMR. Similarly, Regional conferences are held, usually one for each region of the RR, 6 to 12 months before each WRC. In the Annexes to this journal are detailed agendas and CMR'15 CMR'12, and the draft agenda of the CMR'18

**2.2. Radio Regulations Board, JRR (Radio Regulations Board RRB)**

It addresses the correct and accurate application of RR and RoP. Consists of 12 members (2 for each administrative region of the ITU), who are elected during PP, perform their functions independently and non-permanent basis. The Board normally meets 4 times per year at the ITU headquarters in Geneva, Switzerland.Its main functions are:

1. Approve the Rules of Procedure which uses the ITU-R to implement the provisions of RR, and registering frequency assignments made by Member States;

2. Consider matters referred by the BR can not be solved by applying the RR and its Rules of Procedure;

3. Browse research reports unresolved interference by BR application of one or more treatments, and make recommendations thereon;

4. Advise the CMR and AMR

5. Consider appeals against decisions taken by the BR regarding frequency assignments;

6. any other task assigned by a competent conference or by the Council

**2.3. World Radiocommunication Assembly, AMR (World Radio Assembly, WRA)**

Radiocommunication Assemblies (RAs) are responsible for the structure, program and approval of radiocommunication studies. Held every three or four years, for a week, and usually do it the week before each WRC, in the same place. Its functions are:

1. Assign conference preparatory work and other issues of Study;

2. Respond to other requests for conferences of the ITU;

3. Suggest suitable topics for future agendas of CMR;

4. Approve and publish ITU-R and ITU-R Questions developed by the study;

5. Define the work program of the study and dissolve or establish study groups according to need.

**2.4. Radiocommunication Advisory Group, RAG (Radio Advisory Group, RAG)**

The GAR acting through the Director of the ITU-R, and is responsible for:

1. Discuss priorities and strategies adopted in the Sector

2. Monitor the progress of the work of the Study

3. Develop guidance for the work of the Study

4. Recommend measures to foster cooperation and coordination with other organizations and other sectors of the ITU.

Meets once a year, normally the first quarter, the ITU headquarters in Geneva, Switzerland, so open to representatives of administrations of Member States, representatives of Sector Members and the Chairmen of the Study Groups and other groups.

**2.5 Radio Bureau (BR)**

It is the executive organ of the ITU-R, responsible for coordinating the work of the Sector. Its main tasks are:

1 - Provide technical and administrative support to the Conferences, Assemblies and Radiocommunication Study Groups, including Working Groups and Task Groups;

2 - Implement the Radio Regulations and Regional Agreements several

3 - Register and registering frequency assignments and orbital characteristics of space services, and update the Master International Frequency Register

4 - Advise Member States on the equitable, efficient and economical use of radio frequency spectrum and satellite orbits

5 - Investigate cases of harmful interference and assists in resolving

6 - Coordinate the preparation, editing and sending circulars, documents and publications produced under the Sector

7 - Provide technical and management seminars on radio frequencies and nationally, and works closely with the Office of Telecommunication Development to help developing countries.

**2.6. Study Groups and Working Groups**

The ITU-R interacts actively with the sector through the study, CE (Study Groups, SG), and their working groups, WG (Working Party, WP), through activities relating to:

1. Establish technical bases for radiocommunication conferences

2. To prepare draft Recommendations and Reports

3. Preparation of Manuals

The following form the EC and GT:

1. Study 1, SG1: Spectrum Management

1.1. WP 1A: Engineering Techniques

1.2. WP1B: Methodologies for Efficient Spectrum Management and Economic Strategies

1.3. WP 1C: Spectrum

**2. N.A.**

**3. Study 3, SG3: Radio Wave Propagation**

3.1. WP3J: Fundamentals of Propagation

3.2. WP 3K: Point-to-area propagation

3.3. WP 3L: Ionospheric propagation and radio noise

3.4. WP 3M: Point to Point Spread and Earth-Space

**4. Study 4: Satellite Services**

4.1. WP 4A: Efficient use of Orbit and Spectrum for the Fixed Satellite Service, SFS, and the Broadcasting Satellite Service, SRS

4.2. WP 4B: Systems, Radio Interfaces, Millennium Performance and Availability for FSS, BSS and MSS (Mobile Satellite Service), including IP-based applications and satellite news gathering (Satellite Newsgathering, SNG)

4.3. WP4C: Efficient use of Orbit and Spectrum for MSS and SDRS (Radio determination Satellite Service). Is also responsible for aspects of performance related to SDRS

**5. Study 5: Land Services**

5.1. WP 5A: Land Mobile Service above 30 MHz (International Mobile Telecommunications excluded, IMT) Wireless Access in the Fixed Service; Amateur Service and Amateur-Satellite Service

5.2. WP 5B: Maritime Mobile Service, including Global Maritime Distress and Safety System (GMDSS), aeronautical mobile, and Radiodetermination Service

5.3. . WP 5C: Fixed Wireless Systems; HF systems and other systems below 30 MHz in the Fixed and Land Mobile Services

5.4. WP 5D: IMT Systems (3 sessions per year)

**6. Study 6: Broadcasting Services**

6.1. WP 6A Provision of terrestrial broadcasting

6.2. WP 6B: Assembly and access to the broadcasting service

6.3. WP 6C: Production and evaluation of the quality of programs

**7. Study 7: Scientific Services**

7.1. WP 7A: Emission standard frequency and time signals

7.2. WP 7B: Applications to space radiocommunications

7.3. WP 7C: Remote Sensing Systems

7.4. WP 7D: Radio Astronomy

**8. Joint Task Group 4-5-6-7 (Joint Task Group, JTG 4-5-6-7): 1.1 and 1.2 points on the agenda of the CMR'15**

9. **SC (SC):** Special Committee

9.1. Working Group of the Special Committee (SC WP)

10. **CPM (CPM)** Conference Preparatory Meeting (CPM)

11. **CCV (CCV)** Coordination Committee for Vocabulary

The EC and WP define their work through issues, which are approved in the AMR, classified by categories of priority and urgency of the issues to consider as well:

C: Issues Conference as part of the work related to the specific preparations for World and Regional Radiocommunication and decisions of these:

C1: very urgent and priority studies required for the next WRC;

C2: urgent studies, the need is foreseen for other radiocommunication conferences;

S: Issues that are intended to respond to: i) the matters referred to the AMR by PP, any other conference, the Council and the JRR ii) advances in technology or in radio spectrum management, iii) changes in the use or exploitation of radio:

S1: urgent studies to be completed within two years;

S2: important studies necessary for the development of radiocommunications;

S3: required studies to facilitate the development of radio communications.

**3. REGULATIONS OF THE ITU-R**

3.1 Radio Regulations, RR

It is constituted as an international treaty with binding on member states to adhere to it. The regulation classifies the various services that use radio communications, according to several parameters, namely:

1. Link type: Terrestrial (ground to ground) or satellite (Earth-satellite and satellite-ground)

2. Type of coverage: land, maritime, aeronautical

3. Station type: fixed, mobile

4. Type of use: communications, broadcasting, navigation and associated, meteorological, scientific, earth observation, time standard, astronomy, security, special.

It also defines the different types of radio stations, classified as:

1. Terrestrial space

2. Land, sea, air

3. Fixed, mobile

4. Broadcasting, amateur radio astronomy, radio-, etc..

In the 41 RR defined radio services, and 53 types of radio stations. As you might guess, the "distribution" of the radio spectrum to meet the growing needs of different radio services, is a rather complex issue, requiring a prospective balance multiple interests of each of the sectors involved, as the use of this not exclusive range of telecommunication sector.

The RR contains Articles, Appendices (detailed technical annexes), aimed at defining the technical and operational conditions of the various services and stations, to ensure they can operate without interference. It is complemented by resolutions on specific issues, often transient. For purposes of technical specifications of its contents, may incorporate by reference ITU-R Recommendations. In this case, this recommendation becomes part of the RR, and is binding on government.

**3.2. ITU-R Regions**

On the geographical division, in the areas of Radio in RR 3 regions have been defined:

Region 1: Europe and Africa

Region 2: Americas

Region 3: Asia and Oceania



**3.3. Frequency Management**

For the purpose of coordinating the spectrum allocated to each of the 41 service and stations 56, described above, in the RR defined 3 types of processes, namely:

1. Allocation (of a frequency band): Entry in the Table of Frequency Allocations of a given frequency band, to be used by one or more radio services, under specified conditions. This term also applies to the frequency band considered.

2. Allotment (of a frequency or a radio channel): Registration of a given channel in a plan adopted by a competent conference, for use by one or more administrations for a specific radio service in one or more specific countries or regions and under specified conditions.

3. Assignment (of a frequency or a radio channel): Authorization given an administration for a radio station to use a frequency or a specific radio channel under specified conditions. This applies to the 56 types

Note that the assignment is autonomous and sovereign power of each administration to issue the authorization of the entity that makes use of the respective frequency. Moreover, the powers and awards are part of the Radio Regulations, with binding on states, and do regarding the use of these bands. In other words, states undertake to reserve frequencies and channels for specific purposes under the conditions defined in the RR, but keep the absolute power to define the processes by which select and authorize various entities, public or private, to use of these bands for defined services.

Is that the essence of the band allocation table: indicate why and how (technically) is used each band, respecting the autonomy of each state to define who and how (by contract) is used.

**3.4. Primary and Secondary Services**

When a band is attributed to more than one service, such services are listed in the following order in the tables of frequency allocation on a global or regional chapter 5 of the Radio Regulations:

a. Services whose names are printed in "capitals" (example: FIXED) are called services "primary";

b. Services whose names are printed in "normal characters" (example: Mobile) services are called "secondary"

The service stations Side

a. Not cause harmful interference to stations of primary services to which they are already assigned frequencies or which frequencies may be assigned at a later date;

b. They can not claim protection from harmful interference from stations of a primary service to which they are already assigned frequencies or to which frequencies may be assigned at a later date;

c. They may still claim protection against harmful interference in the same or other secondary service to which frequencies may be assigned at a later date.

**3.5. Rules of Procedure**

The Radio Regulations are supplemented by its Rules of Procedure, clarifying the application of particular rules or establishing the necessary practical procedures that may not be stipulated in current regulations. These rules stem from an extensive review and revision of the Rules of Procedure of the Board of the Radio Regulations, taking into account the decisions of the WRC.

These rules are to be used by administrations and the Radiocommunication Bureau in applying the Radio Regulations. The Rules of Procedure are presented in three main parts:

- Part A: Rules relating to a provision of the Radio Regulations, or a limited number of them.

- Part B: Rules relating to a process such as the technical examinations.

- Part C: Rules relating to internal working methods of the Board (see Chap. 3).

**3.6. Recommendations ITU-R**

Formed by a series of international technical standards, the result of work carried out by the Radiocommunication Study Groups. ITU-R Recommendations are adopted by consensus among ITU Member States through exchanges of correspondence, and exceptionally, in the AMR. Your application is not mandatory (except those incorporated by reference RR), but since these are developed by experts from administrations, operators, industry and other organizations dedicated to radio around the world, enjoy and apply high reputation worldwide.Recommendations are usually supplemented by:

1 - Reports (Reports), exposure containing technical, operational or procedural, prepared by a study group on a given topic related to a question under study and its results

2 - Manuals (Handbooks): These are lengthy documents with a description of existing knowledge of the current status of studies or techniques or practices operating in certain aspects of radio, led to radio engineers, specialists in planning systems or in charge of the operation to plan, design or use the services or radio systems, paying particular attention to the requirements of developing countries. Are self-sufficient, i .. e, do not require prior knowledge of other texts or procedures ITU.-R.

Recommendations, Reports, and Manuals issued by the ITU-R follows the following notation:

d. BO Satellite Launch

e. BR Recording for production, storage and playback, TV tapes

f. BS broadcasting service (sound)

g. BT Broadcasting service (television)

h. F Fixed service

i. M mobile services, radio determination, amateur and related satellite

j. P Propagation of radio waves

k. RA Radio Astronomy

l. RS remote sensing systems

m. S Fixed Satellite Service

n. Space applications and meteorology SA

o. SF Frequency sharing and coordination between fixed satellite systems and fixed services.

p. Spectrum Management SM

q. SNG Satellite News Gathering

r. TF emissions standard time and frequency signals

s. V Vocabulary and related subjects