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ITU International Orbit/Spectrum Resources Regulation, Coordination, Filing, and Challenges

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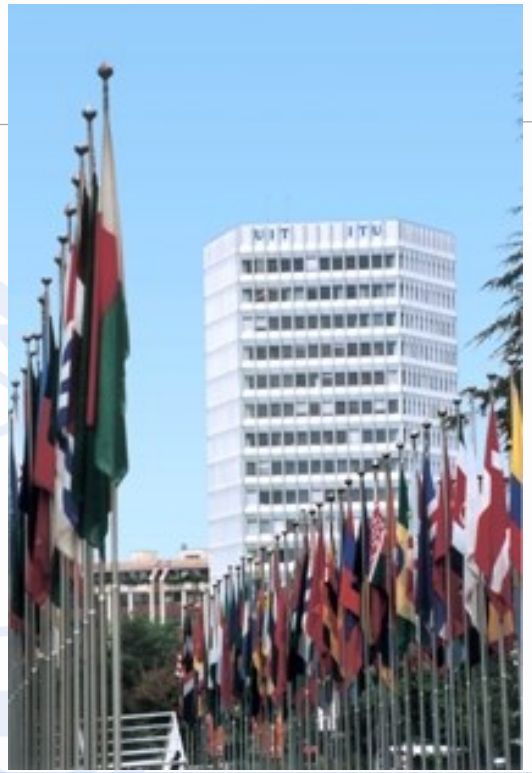
  - WRC-15, WRC-19
- Regulatory Procedures - subject to coordination – in brief
- Challenges

ITU is the United Nations **specialized agency for information and communication technologies (ICTs)**



Our membership

193

MEMBER STATES

+700

INDUSTRY & INTERNATIONAL ORGANIZATIONS

+150

ACADEMIA MEMBERS

The ITU in Brief

- 17 May 1865, the first International Telegraph Convention was signed in Paris and the International Telegraph Union (ITU) was established to manage the Convention
- 1932, ITU became International Telecommunication Union
- 1947, UN specialized agency for information and communication technologies
- Geneva as headquarter and thirteen regional and area offices
- 193 Member states and over 700 Sector Members and Associates
- Based on the principle of international cooperation between governments (Member States) and the private sector (Sector Members, Associates and Academia)

See www.itu.int

ITU sectors

ITU has three main areas of activity organized in 3 Sectors:

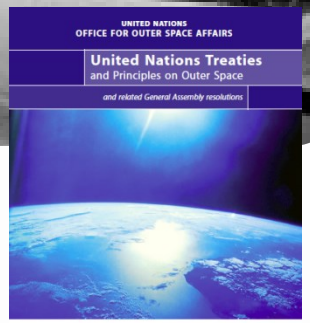
- ITU Radiocommunication Sector (ITU-R) - Global management of the radio-frequency spectrum and satellite orbit resources and international standards for radiocommunication systems

- ITU Standardization Sector (ITU-T) - International standards in the global infrastructure of information and communication technologies

- ITU Development Sector (ITU-D) - Equitable and affordable access to telecommunications

United Nations Outer Space Treaty (1967)

- Outer space free for exploitation and use by all states in conformity with international regulations
- States retain jurisdiction and control over objects they have launched into outer space
- States shall be liable for damage caused by their space objects



ITU Constitution / Convention

Art. 1 : *ITU shall **effect allocation of bands** of the radio-frequency spectrum, the allotment of radio frequencies and the **registration of radiofrequency assignments** and, for space services, of **any associated orbital position** in the geostationary-satellite orbit or of any associated characteristics of satellites in other orbits, in order to **avoid harmful interference** between radio stations of different countries.*

Legal Framework

- **International Telecommunication Union**
  - Principles of use of orbit/spectrum
  - Allocation of frequency bands
  - Procedures, Plans, operational measures
  - Instruments (CS, CV, RR, RoPs, Recs)

ITU Constitution / Convention

- ***To apply the latest technical advances** as soon as possible*
- ***To avoid harmful interference***

- **To establish** global standards and associated material to assure the necessary required performance, interoperability and quality

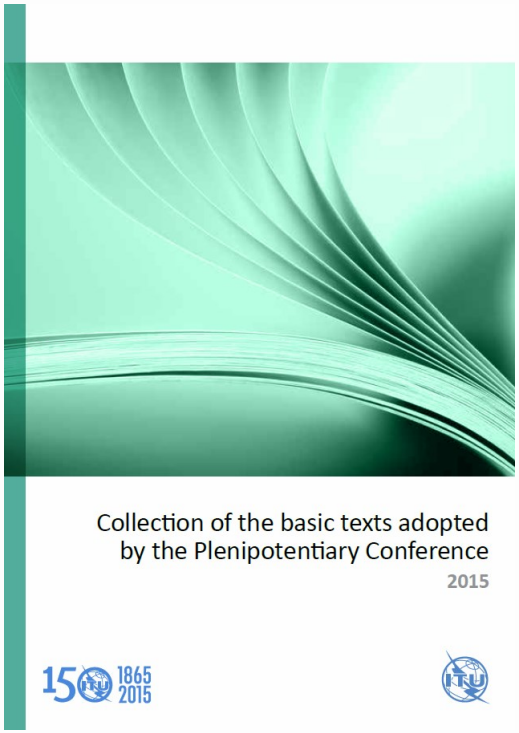
- **To ensure** the **rational**, **equitable**, **efficient** and **economical** use of the radio-frequency spectrum and satellite-orbit resources

Article 44
Article 45
RES 71

ITU Convention

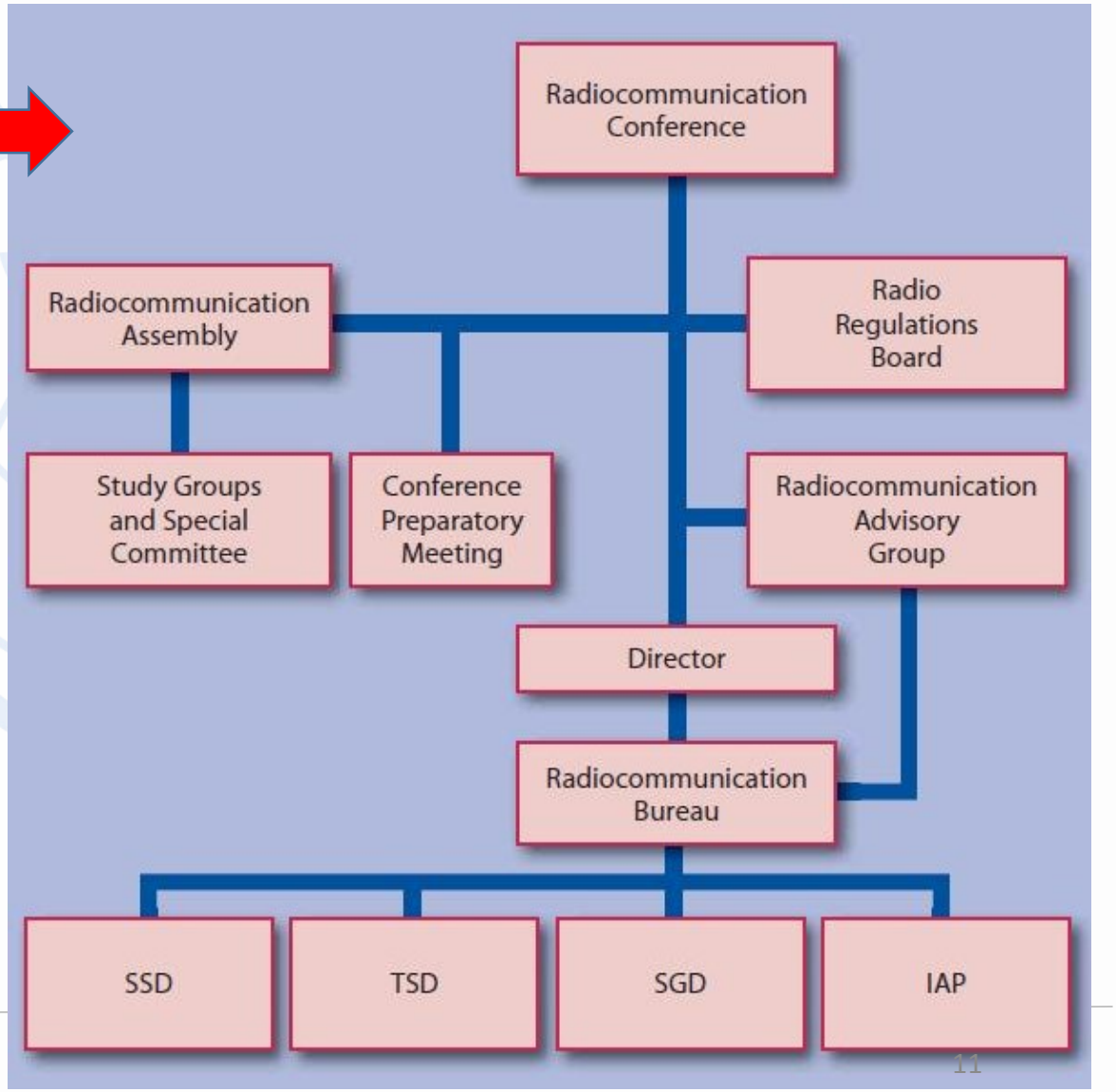
SECTION 5 – Radiocommunicataion Sector

- SECTION 5 – Radiocommunication Sector
  - ARTICLE 7 – World Radiocommunication Conference
  - ARTICLE 8 – Radiocommunication Assembly
  - ARTICLE 9 – Regional Radiocommunication Conferences
  - ARTICLE 10 – Radio Regulations Board
  - ARTICLE 11 – Radiocommunication Study Groups
  - ARTICLE 11A – Radiocommunication Advisory Group
  - ARTICLE 12 – Radiocommunication Bureau



Legal Framework for Spectrum Access/Use

- **ITU – R Radiocommunication Sector**
- ITU – T Telecommunication Standardization Sector
- ITU – D Telecommunication Development Sector
- ITU – TELECOM



Radio Regulations

- Intergovernmental Treaty governing the use of spectrum/orbit resources by administrations
- Define the **rights** and **obligations** of Member States in respect of the use of these resources
- Recording of a frequency assignment in the Master Register (**MIFR**) provides international recognition and protection

- **Free download**

More than 2000 pages

- Updated every 3-4 years by World Radiocommunication Conferences, WRCs

- Rules of Procedure and Radio Regulations Board

Consensus took 500 meetings
692 hours or "86.5 working days"

WRC-15 in numbers

2 - 27 Nov 2015 in Geneva
3275 participants
162 Member states
40 topics
678 documents with 2888 proposals
Final Acts www.itu.int/pub/R-ACT-WRC.12-2015

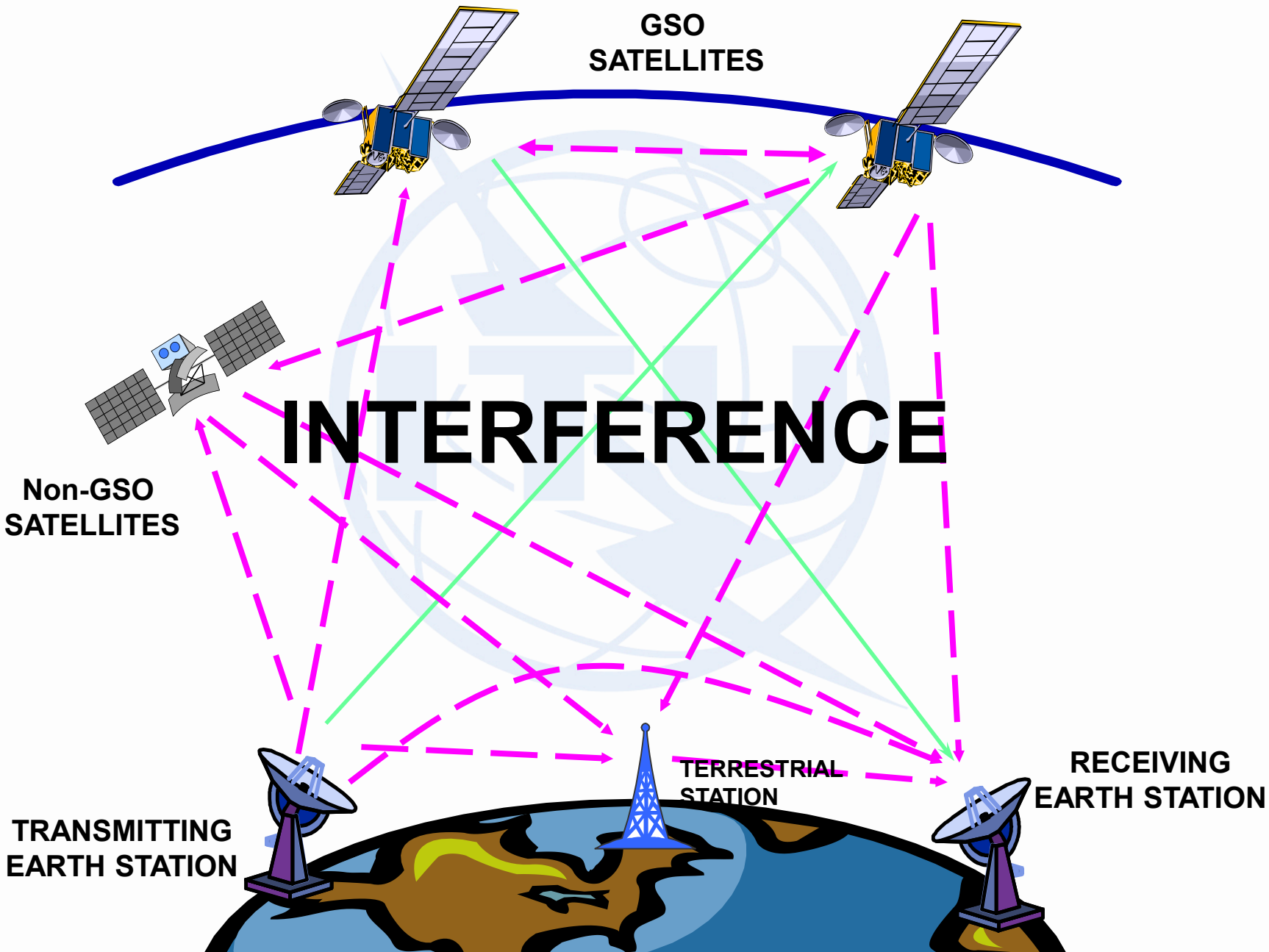
 © ITU

ITU-R Study Groups

- ITU-R Study Groups develop the technical bases for decisions taken at WRCs and develop Recommendations, Reports and Handbooks on radiocommunication matters.
- More than 4000 specialists from ITU Member States, Sector and Associate Members, and Academia.
- ITU-R counts 6 Study Groups, composed by 21 Working Parties.
  - SG 1 - Spectrum management
  - SG 3 - Radiowave propagation
  - SG 4 - Satellite services
  - SG 5 - Terrestrial services
  - SG 6 - Broadcasting service
  - SG 7 - Science services

Working Parties of Study Group 7

- **Working Party 7A (WP 7A)** - Time signals and frequency standard emissions: Systems and applications (terrestrial and satellite) for dissemination of standard time and frequency signals
- **Working Party 7B (WP 7B)** - Space radiocommunication applications: Systems for transmission/reception of telecommand, tracking and telemetry data for space operation, space research, Earth exploration-satellite, and meteorological satellite services
- **Working Party 7C (WP 7C)** - Remote sensing systems: active and passive remote sensing applications in the Earth exploration-satellite service and systems of the MetAids service, as well as space research sensors, including planetary sensors
- **Working Party 7D (WP 7D)** - Radio astronomy: radio astronomy and radar astronomy sensors, both Earth-based and space-based, including space very long baseline interferometry (VLBI)


GSO
SATELLITES
INTERFERENCE
Non-GSO
SATELLITES
TERRESTRIAL
STATION
RECEIVING
EARTH STATION
TRANSMITTING
EARTH STATION

Radio Regulations - Mechanisms

Control of Interference

ALLOCATION

Frequency separation of stations of different services

COORDINATION

between Administrations to ensure interference-free operations conditions

POWER LIMITS

PFD to protect TERR services / EIRP to protect SPACE services / EPFD to protect GSO from Non-GSO

RECORDING

In the Master International Frequency Register (MIFR)

International recognition

MONITORING

International monitoring system

SHARING ORBIT/SPECTRUM RESOURCE

1. COORDINATION Non-Plan APPROACH

- First come, first served
- Priority to Rational, Efficient, Economical Use
- Rights acquired through coordination with administrations concerning actual usage
- Dense/irregular orbital distribution of space stations

2. PLANNING APPROACH

- A priori Plans for future use by all countries - Member States
- Priority to Equitable Access
- Rights acquired during a Planning process at a WRC
- Predetermined orbital position & frequency spectrum
- Congestion of GSO
- Additional use possible

International Recognition to use orbit/spectrum

Registration of the Satellite Network Notice in the Master Register (MIFR)

Parking lot analogy

1. COORDINATION Non-Plan APPROACH

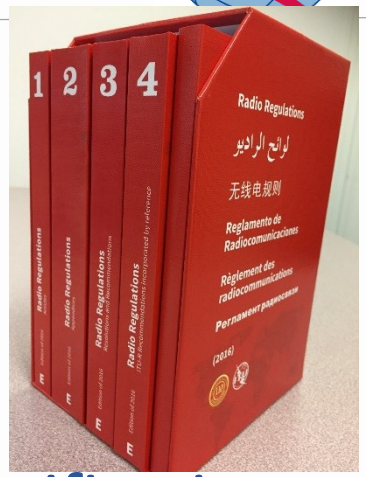
2. PLANNING APPROACH

Coordination Approach - *Elements*

- **Publish a planned use of satellite network**
- **Fulfil requirements mentioned in the RR**
- **Negotiate with concerned administrations and get agreements**
- **Record the coordinated assignments in the MIFR (Master International Frequency Register) to be taken into account by other administrations**

Radio Regulations

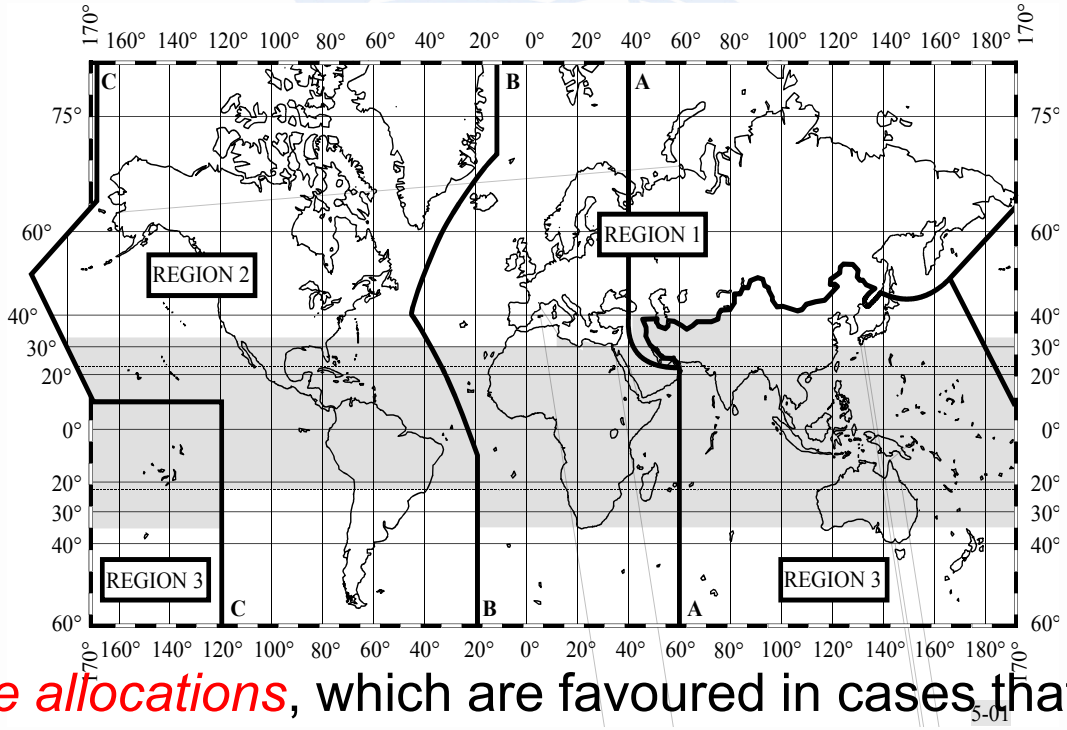
– examples of some useful sections



- **Article 1** Definitions
- **Article 5** Table of Frequency Allocations
- **Article 9** and **11** Procedures for the advance publication (**API**), coordination (**CR/C**) and notification
- **Article 21/22** Power limits
- **Article 25** Amateur and Amateur-satellite service
- **Article 29A** Radio services related to Earth observation
- **Appendix 1** Classification of emissions
- **Appendix 4** Data required for satellite filings

ART. 5 frequency allocations - 1

- **No. 5.2 - For the allocation of frequencies the world has been divided into three "radiocommunication" Regions**



- *Exclusive allocations*, which are favoured in cases that involve *broad international use of equipment*
- *Shared frequency allocations*, which are applied to maximize the use of the available spectrum when *two or more radiocommunication services can effectively utilize the same frequency band*

ART. 5 frequency allocations - 2

- **A *shared* frequency band** can be allocated to more than one service (***PRIMARY*** or **secondary**), either on a worldwide or Regional basis
- **No. 5.28 - Stations of a *secondary service*:**
  - **No. 5.29** - *shall not cause harmful interference to* stations of PRIMARY services to which frequencies are already assigned or to which frequencies may be assigned at a later date;
  - **No. 5.30 –** *can not claim protection from* harmful interference from stations of a PRIMARY service to which frequencies are already assigned or may be assigned at a later date;
  - **No. 5.31** - *can claim protection*, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.
- **A *footnote* to a frequency band or service *may include a restriction* on the service or services concerned**
  - For example:
    - *to operate in a particular country(ies) or service area*
    - *not causing harmful interference to another service*
    - *not claiming protection from another service*

Example page of Table of frequency allocations

335.4-410 MHz

Allocation to services		
Region 1	Region 2	Region 3
335.4-387	FIXED MOBILE 5.254	
387-390	FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255	
390-399.9	FIXED MOBILE 5.254	
399.9-400.05	MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	
400.05-400.15	STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	
400.15-401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264	

RR No. 4.4

➢

❝ *Administrations of the Member States* ***shall not assign to a station any frequency in derogation of*** *either the* ***Table of Frequency Allocations*** *in this Chapter* ***or the other provisions*** *of these Regulations, except on the express condition that such a station, when using such a frequency assignment,* ***shall not cause harmful interference to, and shall not claim protection from*** *harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.*❞

Rules of Procedure relating to No.4.4

- **Administrations, prior to bringing into use any frequency assignment to a transmitting station operating under No. 4.4, shall determine:**

  a) That the intended use of the frequency assignment to the station under **No. 4.4** will not cause harmful interference into the stations of other administrations operating in conformity with the Radio Regulations;

  b) What measures it would need to take in order to comply with the requirement to immediately eliminate harmful interference pursuant to **No. 8.5**.

- When notifying the use of frequency assignments to be operated under **No. 4.4**, the notifying Administration **shall provide a confirmation** that it **has determined** that these frequency assignments meet the conditions referred to above in item a) and that it **has identified measures to avoid harmful interference** and **to immediately eliminate such** in case of a complaint.

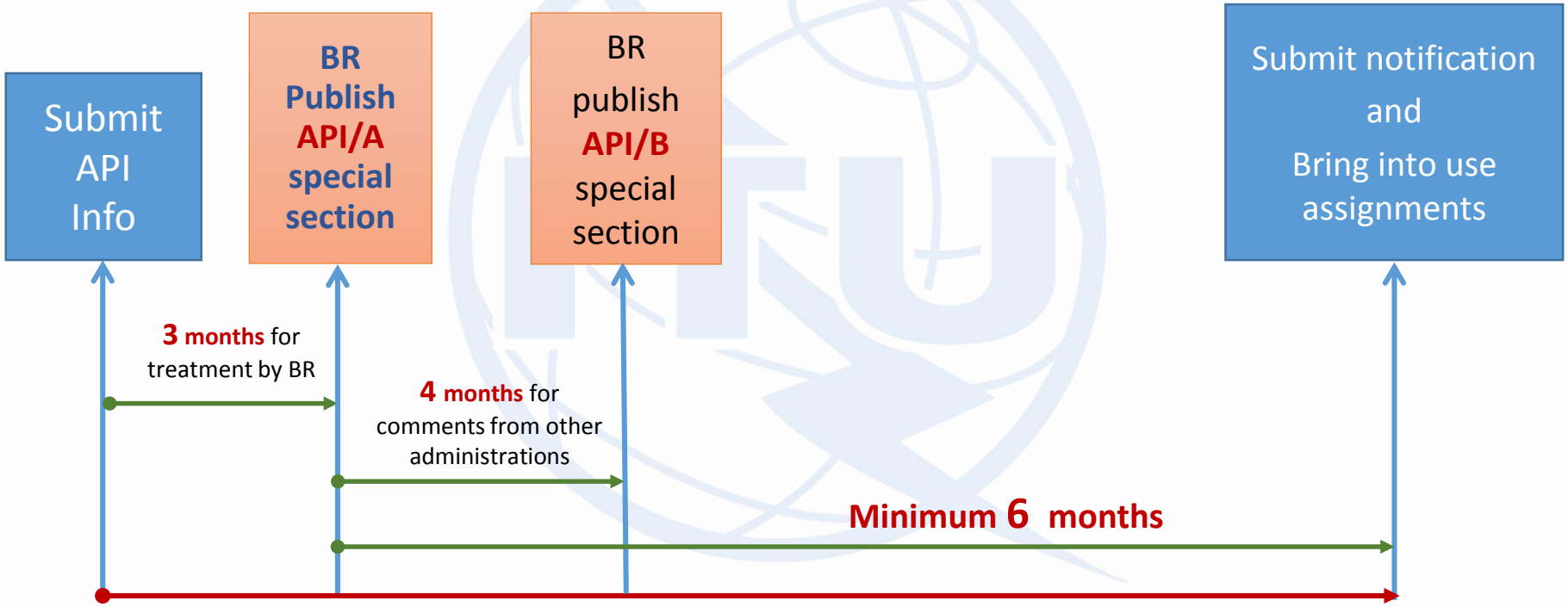
Article 18 - LICENSING

18.1 No transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject

18.6 The government which issues a *licence shall indicate* therein in clear form *the particulars of the station*, including its name, call sign, as well as the general characteristics of the installation

18.10 The holder of the certificate [*licence*] *shall comply with the provisions of these Regulations* applicable to licence holders

Regulatory procedure for satellite networks **not subject to coordination**



MAXIMUM 7 YEARS !

In total, ≈ 9 MONTHS to 7 YEARS !

Advance Publication Information (API)

- **API is a mandatory procedure (No.9.1)**
  for all satellite network not subject to coordination procedure
- **To know whether a frequency band is subject to coordination,**
  read the footnotes in the Table of Frequency Allocations

  Examples of footnote indicating coordination is required:

  - **No. 5.364** *The use of the band 1 610-1 626.5 MHz by the mobile-satellite service (Earth-to-space) and by the radiodetermination-satellite service (Earth-to-space) is subject to coordination under No. **9.11A**.*
    (For coordination under No. **9.11A**, see also **Rule of Procedure**)
  - **No. 5.286** *The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. **9.21**.*

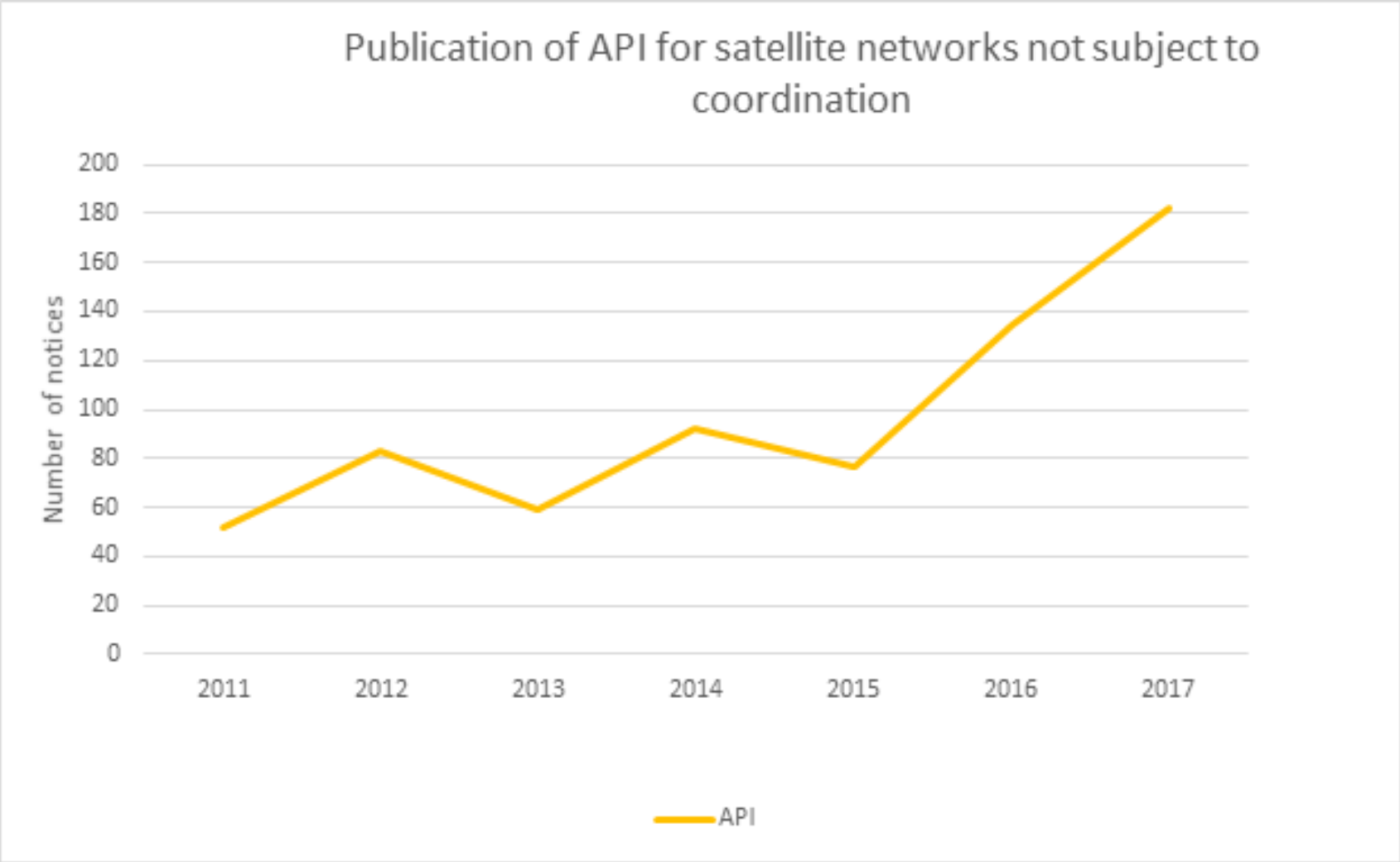
- **For such systems not subject to coordination, the provisions of Article 9, Sub-Section IA (API on satellite networks that are not subject to coordination procedure under Section II), are applicable.**
- **Although not subject to coordination, there is a commenting procedure and resolutions of difficulties specified under No.9.3**
- **Small satellites usually make use of frequency bands that are not subject to coordination**

Regulatory procedures for comments and resolution of difficulties

- **Commenting procedures**
  - Comments to an API/A should be submitted within **4 months** of API (No.**9.3**)
  - Comments to be captured using **SpaceCom software** (**RES-55**)
  - The Bureau publishes the list of administrations which have sent comments in an **API/B** Special Section in a BR IFIC
- **Cooperation and Resolution of Difficulties**
  - Both administrations shall endeavor to cooperate in joint efforts to resolve any difficulties and shall exchange any additional relevant information that may be available
  - Either party can request for the assistance of the Radiocommunication Bureau (No.**9.3**)
  - **In case of difficulties**, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations
  - **If no such means can be found**, it may request the other administrations to explore all possible means to meet its requirements
  - The administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks

ITU Publication of API

not subject to coordination



Notification for recording in the Master Register

- **Why notify (No.8.3)?**
  - Has the right to international recognition
  - this right means that other administrations shall take it into account when making their own assignments, in order to avoid harmful interference.
- **What assignments should be notified? (No.11.2)**
  - Any frequency assignments of transmitting and receiving earth and space stations:
    - *Capable of causing harmful interference; or*
    - *Used for international radiocommunication; or*
    - *Seeking to obtain international recognition; or*
    - *Non conforming assignment seeking to be recorded for information purposes only…..*
- Frequency assignments to earth stations in the amateur-satellite service is **not** required to be notified for recording in the MIFR (**No.11.14**)

Information required for filing (1)

- **Specified in Appendix 4 of the Radio Regulations, including:**
  - Satellite name, responsible administration and op_agcy
  - Orbital characteristics
  - Antenna beam characteristics
  - Frequency band
  - Service Areas
  - Power levels/designation of emissions etc.
  - Earth stations
  - etc. …
- **All submissions should be in BR software SpaceCap compatible format (Resolution-55)**

Appendix 4 – example (1)

Items in Appendix	*C – CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA*
C.1	FREQUENCY RANGE
C.1.a	the lower limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay
C.1.b	the upper limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay
C.2	ASSIGNED FREQUENCY (FREQUENCIES)
C.2.a.1	the assigned frequency (frequencies), as defined in No. **1.148** – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided In the case of advance publication, required only for active sensors In the case of geostationary and non geo-stationary satellite networks, required for all space applications except passive sensors In the case of Appendix **30B**, required only for notification under Article 8
C.2.a.2	the channel number
C.2.b	the centre of the frequency band observed – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz

Appendix 4 – example (2)

AP4-65

Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
									C.1	
X	X	X						X	C.1.a	
X	X	X						X	C.1.b	
									C.2	
		+	+	+	X	X	X	+	C.2.a.1	
						X	X		C.2.a.2	
		+	+	+					C.2.b	X

Antenna radiation patterns

Submit antenna radiation patterns for space station beams and associated Earth stations in one of the following way:

1. **Indicate the antenna pattern IDs by selecting from the Antenna Pattern Library available at the webpage: https://www.itu.int/en/ITU-R/software/Pages/ant-pattern.aspx**
2. **Provide as a table of Gain vs off-axis angles**
3. **Describe them with equations**
4. **Provide diagrams graphical format in JPEG or PDF files**

In all cases, ensure that

- **the gain value is clearly shown for all values of off-axis angles from 0° to 180°**
- **the gain value is consistent with the maximum gain indicated in the mdb file**

Antenna radiation patterns

Eg. Earth Station Antenna Patterns

AP7	APERR_012V01	Appendix 7 Earth station antenna pattern for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz.	Receiving	32
			Transmitting	75

Non-directional	APEND_099V01	Non-directional earth station antenna pattern.	Receiving	607
			Transmitting	608

Eg. Space Station Antenna Patterns

Non-directional	APSND_499V01	Non-directional space station antenna pattern.	Receiving	610
			Transmitting	609

Typical services

- Amateur-Satellite Service
- Earth Exploration-Satellite Service
- Meteorological-Satellite Service
- Space Research-Satellite Service
- Space Operation Service
- Others

ITU Procedures
for Amateur-Satellite Service

- API must be submitted to ITU before coordinating frequency with IARU
- Note that frequency assignments in notification must be covered by frequency bands in API, therefore avoid submitting a very narrow frequency band at the API, in case there is a change needed during the comments/consultation process
- Administrations authorizing space stations in the amateur-satellite service shall ensure that sufficient earth command stations are established before launch to ensure that any harmful interference caused by emissions from a station in the amateur-satellite service can be terminated immediately (see No. **25.11**)
- Amateur-satellite service is exempted from cost recovery fee (please refer to **DEC 482**)

Amateur Satellite Service
– example of frequency allocations

Frequency band	Service	Type of allocation
28-29.7 MHz	Amateur-Satellite Service	Primary
144-146 MHz	Amateur-Satellite Service	Primary
435-438 MHz	Amateur-Satellite Service	Secondary (No.5.282)
1260 – 1270 MHz	Amateur-Satellite Service (E-S)	Secondary (No.5.282)
2400 – 2450 MHz	Amateur-Satellite Service	Secondary (No.5.282)
3400 – 3410 MHz	Amateur-Satellite Service	Secondary (No.5.282)
5650 – 5670 MHz	Amateur-Satellite Service (E-S)	Secondary (No.5.282)
5830 – 5850 MHz	Amateur-Satellite Service (S-E)	Secondary
…….		

For more details and the conditions for the usage of these bands, please refer to Article **5** of the Radio Regulations.

Earth exploration-satellite service - definitions in the Radio Regulations

- **1.51** *Earth exploration-satellite service:* A *radiocommunication service* between *earth stations* and one or more *space stations*, which may include links between *space stations*, in which:

– information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from *active sensors* or *passive sensors* on Earth *satellites*;

– similar information is collected from airborne or Earth-based platforms;

– such information may be distributed to *earth stations* within the system concerned;

– platform interrogation may be included.

This service may also include *feeder links* necessary for its operation.

Earth exploration-satellite service - definitions in the Radio Regulations-2

- **1.52** *meteorological-satellite service:* An *earth exploration-satellite service* for meteorological purposes.
- **1.182** *active sensor:* A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by transmission and reception of *radio waves*.
- **1.183** *passive sensor:* A measuring instrument in the *earth exploration-satellite service* or in the *space research service* by means of which information is obtained by reception of *radio waves* of natural origin.

Earth exploration-satellite service (EESS) - Frequency usage

- **Satellite bus links for TT&C**
  - The primary functions – telemetry, tracking, and command (TT&C) are operations functions associated with the satellite bus. The satellite bus provides the necessary support functions for the operation of the instruments (payload).
  - The allocations near 2 GHz for the EESS provide reliable, weather independent links for Earth exploration satellites.
- **Sensor data downlink**
  - The transmission of sensor data to earth station, either directly or indirectly via a data relay satellite, is carried through the satellite bus and its data handling system. This data link will be called the science data or EESS data downlink.
- **Typically, the satellite bus links require relatively low bandwidths as they support a data rate of about 1 Mbit/s and often much less, while the science data rates typically are in the order of a hundred Mbit/s.**

Relevant class of stations for the Earth exploration-satellite service

Station type	Class of station symbol (Preface)
Space station in the earth exploration-satellite service	EW
Space research (active sensor) space station	E1
Space station in the Earth exploration-satellite service (active sensor)	E3
Space station in the meteorological-satellite service	EM
Preface to the BRIFIC - https://www.itu.int/ITU-R/go/space-preface	

Information required for filing - sensors

- **Additional information required for Earth exploration-satellite service (active), sensors specific information:**
  - Active Sensors
    - *Transmit beam*
      - Mean peak power and mean power density
      - Pulse length and pulse repetition frequency
    - *Receive beam*
      - Receiver noise bandwidth
      - Noise temperature at output of signal processor
  - Passive sensors
      - Observed bandwidth
      - Sensitivity
  - To capture sensor information in SpaceCap, go to Beam tab, check the box "**Beam has Sensors**"
  - For active sensors, ensure that there are corresponding transmit and receive beams with the same name
  - Class of stations – **E1, E2, E3, E4** (consult the Preface)

Symbol	Space Station Class of Station
E1	Space research (active sensor) space station
E2	Space research (passive sensor) space station
E3	Space station in the Earth exploration-satellite service (active sensor)
E4	Space station in the Earth exploration-satellite (passive sensor)

Space Operation Service

Space operation service : ET

Space operation functions: EK, ER, ED

For ET, ensure that there is an allocation for the space operation service, either in the main table or through a footnote.

For EK, ER, ED, ensure that there is a main service in the notice, and that the band selected for the space operation function has also an allocation for the main service (see Rules of procedure relating to No.1.23).

Space Operation Service

RoP No.1.23

2 In the No. 11.31 examinations, notices concerned with space operation functions will be considered in conformity with the Table of Frequency Allocations (favourable Finding) in the case where the assigned frequency (and the assigned frequency band) lies in a frequency band allocated to the:

- **space operation service, or**
- **the main service in which the space station is operating (e.g. FSS, BSS, MSS).**

3 In the case where the assigned frequency concerning space operation functions lies in a frequency band allocated to a service in which the space station has no operating function the No. 11.31 Finding will be unfavourable.

Space Operation Service
– example of frequency allocations

Frequency band	Service	Direction
30.01 – 37.5 MHz	Space Operation Service	S-E, E-S
174 – 184 MHz	Space Operation Service	S-E
267 – 273 MHz	Space Operation Service	S-E
470 – 485 MHz	Space Operation Service	S-E
1525 – 1535 MHz	Space Operation Service	S-E
1750 – 1850 MHz	Space Operation Service	E-S
2025-2100 MHz	Space Operation Service	S-E, E-S
2200-2290 MHz	Space Operation Service	S-E, E-S
7100-7155MHz	Space Operation Service	E-S
7290-7235MHz	Space Operation Service	E-S

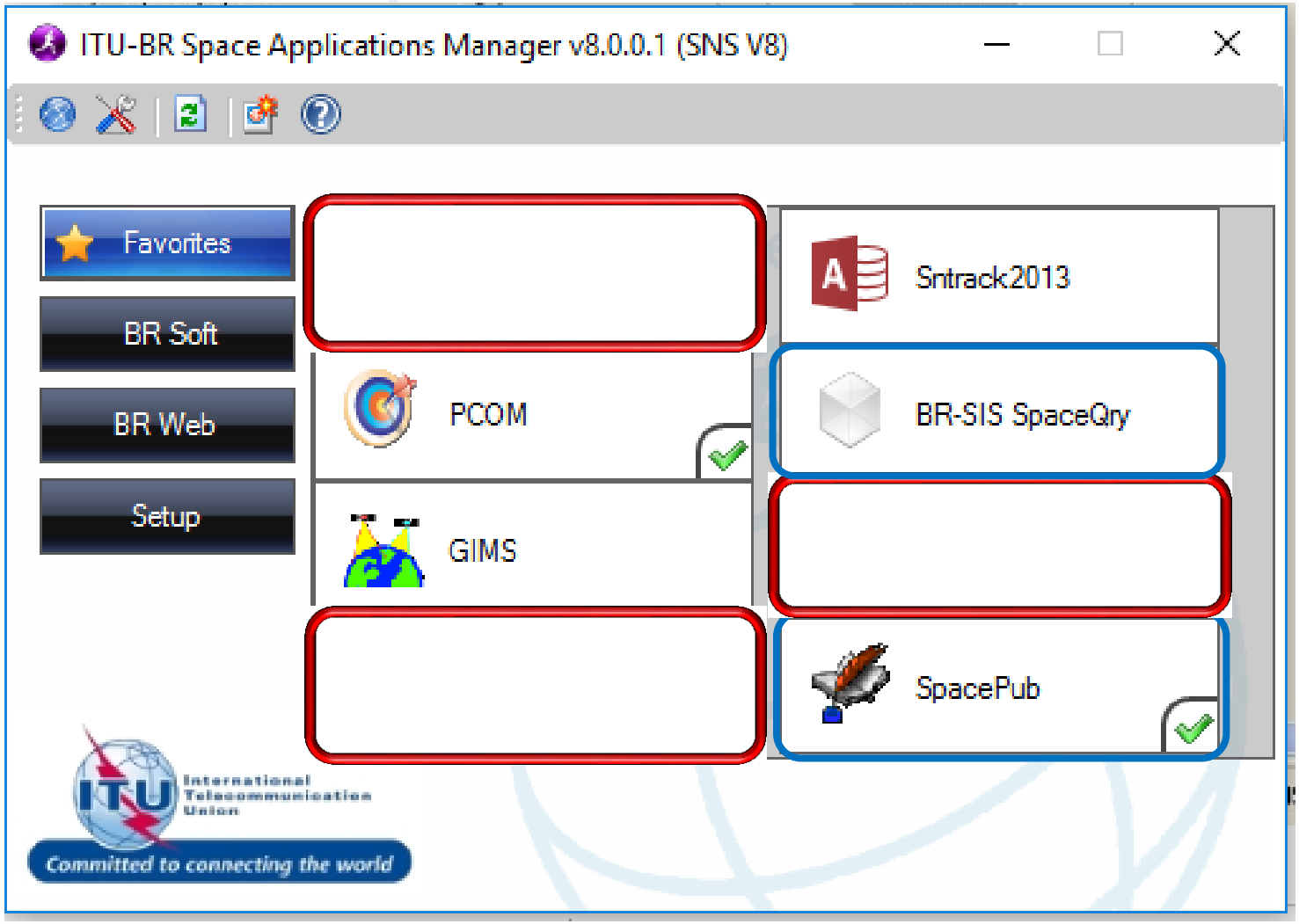
… …

For more details and the conditions for the usage of these bands, please refer to Article **5** of the latest Radio Regulations.

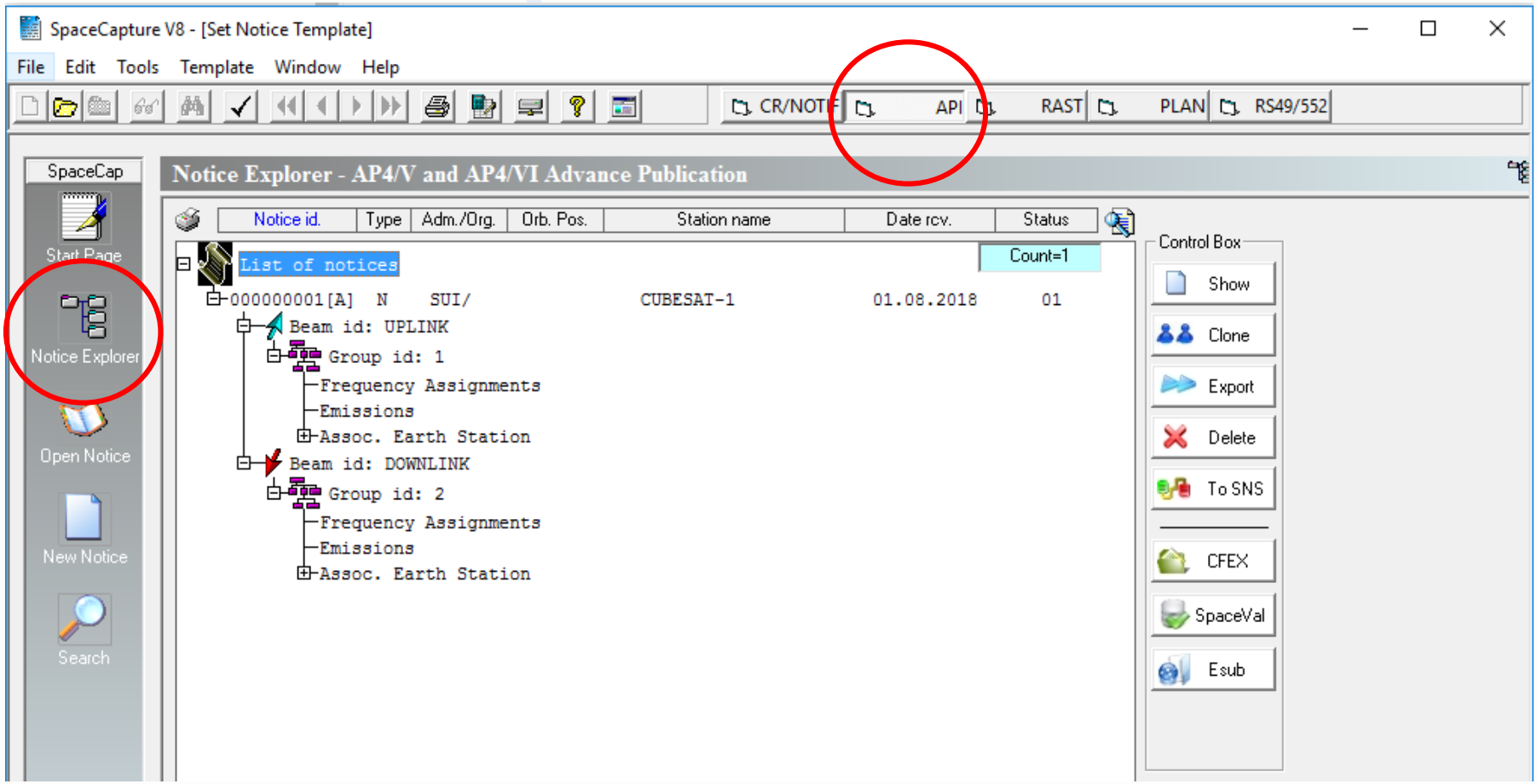
How to capture? --- BRsoft

- **The latest version of BR software** for capture and validation (**SpaceCap and SpaceVal**) of space notices are available from the ITU website (**http://www.itu.int/ITU-R/go/space-software**)
- They are also available with the **BR IFIC DVD**
- **Administrator privilege** is required to install these software.
- Can add **descriptions** in PDF or Word format to supplement the information

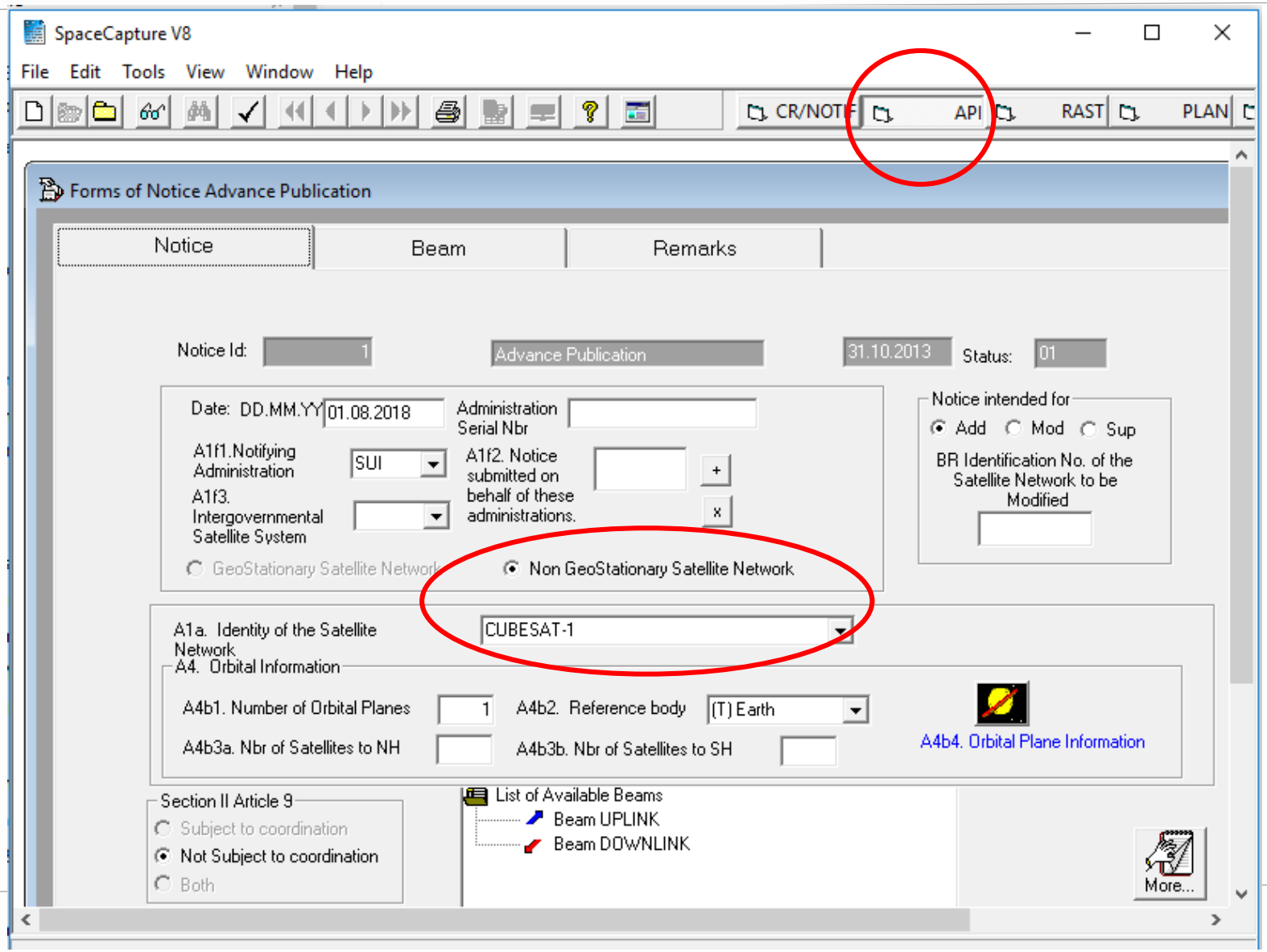
How to capture? --- BRsoft



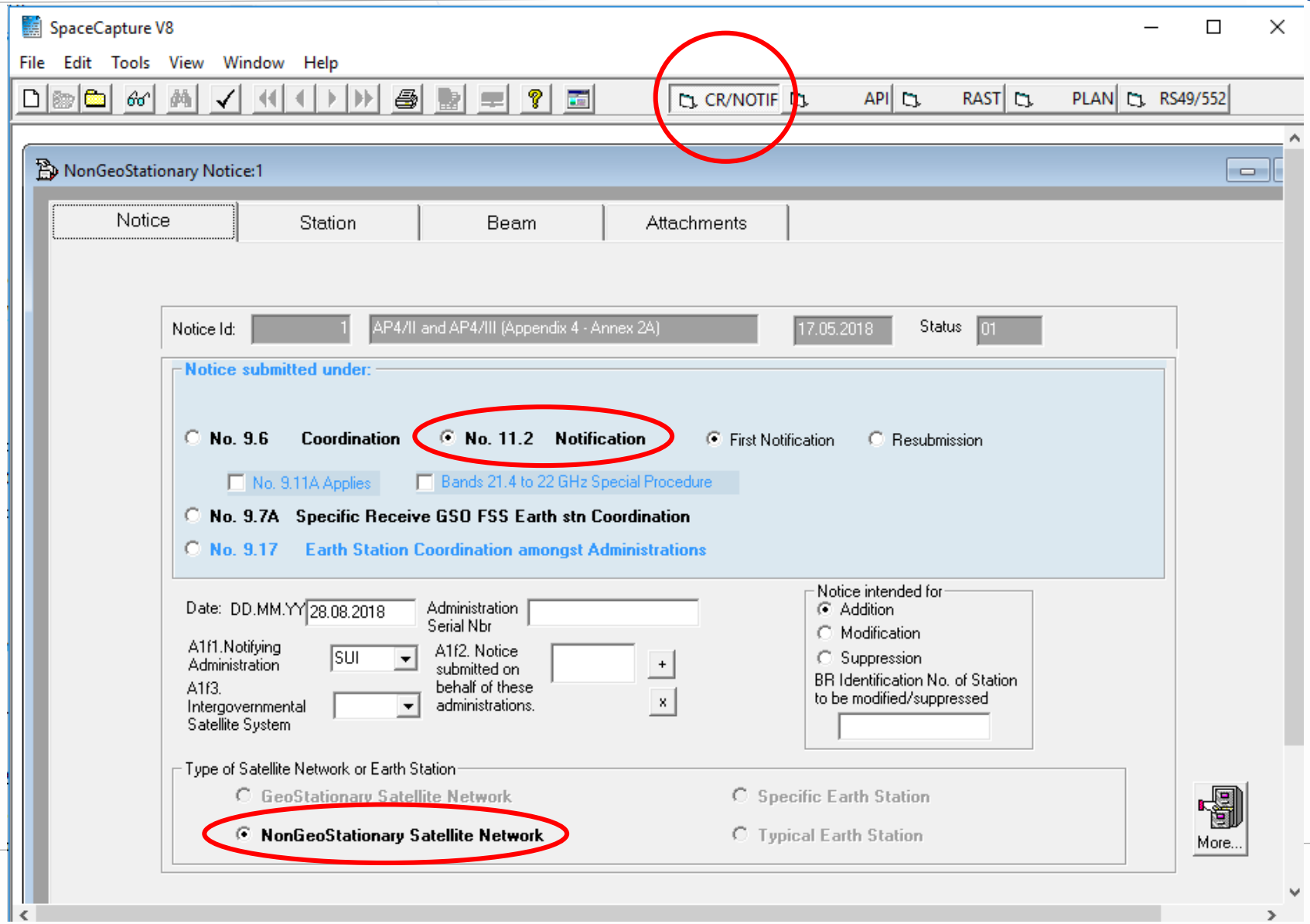
SpaceCap for API



SpaceCap for API



SpaceCap for Notification



Before you submit….

- Run **Spaceval** to ensure that there are **no fatal errors**
- If there are fatal errors, try to correct them before submission
- If you are unable to get rid of the fatal errors, you can **describe** them in the cover letter of your submission, the Bureau will provide assistance to address the errors
- Make sure that all required antenna patterns are provided, either by pattern id, formula or diagrams
- Do not forget to add **notes/attachments** when necessary
- *Satellite filings* ***must be submitted by the Administration***

e-Submission system online

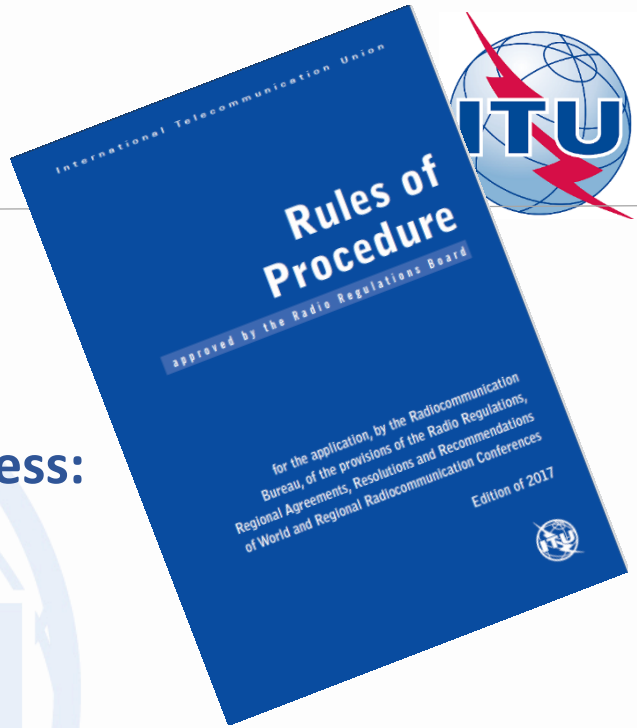
Effective: 01.08.2018

- **Upload the electronic notice via the Bureau's new online submission system "e-submission of satellite network filings" (https://www.itu.int/itu-r/go/space-submission) in accordance with the revised Rules of Procedure on Receivability**

- Notices submitted using "e-Submission of satellite network filings" for space services shall be recorded as received on the actual date of receipt, irrespective of whether or not that is a working day at the ITU/BR's offices in Geneva
- Notices submitted using "e-Submission of satellite network filings" for space services do not require any separate confirmation by telefax or mail.

(see BR circular letter **CR/434** dated **1 August 2018** for more details)

Other things to note



- **Email: BRMAIL@ITU.INT**
- **Fax: +41 22 730 5785 (several lines)**
- **All mail must be sent to the following address:**

  Radiocommunication Bureau, ITU

  Place des Nations, CH-1211 Geneva 20

  Switzerland
- If a notice does not contain all of the mandatory information as defined in the AP**4** of the RR, further processing of the notice will remain in abeyance and a date of receipt will not be established until the missing information is received
- If all mandatory data have been submitted and further clarification is required concerning the correctness of the mandatory data, the Bureau shall request the ADM to provide the clarification within 30 days
- If the information is received within the 30 days period, the original date of receipt is retained, otherwise, a new date of receipt will be established

Modification of characteristics

- According to **No.9.2**, amendments to the information for NGSO filing that requires a new API are:
  - **Additional frequency band**
  - **Modification of the direction of transmission**
  - **Modification of reference body**
- However, it is a good practice to submit a modification to the API any change in characteristics including orbital characteristics, service area (adding earth stations) etc.
- This will allow other administrations/operators the chance to submit comments before the modifications are notified for recording in the Master Register.
- If during the notification, there are other changes in characteristics from the information published in API/A, other administrations can submit comments following the **Part I-S** (**No.11.28.1**).

Cost recovery

- Cost recovery framework is defined in the Council Decision 482
- Filings for amateur-satellite service is exempt from cost recovery fee
- All other services are subject to cost recovery fee
- For satellite networks not subject to coordination
  - API – flat fee of 570 CHF
  - Notification – flat fee of 7030 CHF
- Modification charged with flat fee just like a new filing
- Notification of Earth stations are not chargeable
- Each Administration has one free filing per year
- In the event of non-payment by the due date, the filing will be cancelled (RR9.2B.1 and A.11.6). However the invoice continue to be payable for the Administration

  Note also ROP relating to late payment
- http://www.itu.int/ITU-R/go/space-cost-recovery/en

API/A

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE	ZACUBE-2			SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	API/A/12068
				BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2864 / 20.02.2018
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	AFS	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	NGSO	NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN	117545401
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON / INFORMACIÓN RECIBIDA POR LA OFICINA EL					15.12.2017

Ces renseignements reçus par le Bureau des radiocommunications, en application du numéro 9.1/9.2 du Règlement des radiocommunications, sont publiés conformément au numéro 9.2B.

This information, received by the Radiocommunication Bureau pursuant to No.9.1/9.2 of the Radio Regulations, is published in accordance with No. 9.2B.

Esta información, recibida por la Oficina de Radiocomunicaciones con arreglo al número 9.1/9.2 del Reglamento de Radiocomunicaciones, se publica de acuerdo con lo dispuesto en el número 9.2B.

Une administration qui estime que des brouillages inacceptables risquent d'être causés à ses réseaux ou à ses systèmes à satellites existants ou en projet communique à l'administration qui a demandé la publication des renseignements ses observations, avec copie au Bureau des radiocommunications, dans le délai indiqué ci-après.

Any administration which believes that unacceptable interference may be caused to its existing or planned satellite networks or systems shall communicate its comments to the publishing administration, with a copy to the Radiocommunication Bureau, by the deadline indicated below.

Cualquier administración que estime que se podría causar interferencia perjudicial a sus redes o sistemas de satélites existentes o planificados deberá comunicar sus comentarios a la administración que publica, con copia a la Oficina de Radiocomunicaciones, en el plazo que se indica más abajo.

DATE LIMITE POUR LA RÉCEPTION DES COMMENTAIRES EXPIRY DATE FOR THE RECEIPT OF COMMENTS FECHA LÍMITE PARA LA RECEPTIÓN DE LOS COMENTARIOS	20.06.2018

Contains advance publication information on a planned satellite network.

API/B

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE	PRISMA-I1	SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	API/B/827
		BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2864 / 20.02.2018
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE: I	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL: NGSO	NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN	117545350 / 117545350

RÉFÉRENCE DE LA SECTION SPÉCIALE (BR IFIC / DATE) SPECIAL SECTION REFERENCE (BR IFIC / DATE) REFERENCIA DE LA SECCIÓN ESPECIAL (BR IFIC / FECHA)	API/A/12034 (BR IFIC 2854 / 19.09.2017)

1. La présente Section spéciale est publiée conformément au numéro 9.5 du Règlement des radiocommunications, et concerne la demande de coordination publiée dans la section spéciale API/A indiquée ci-dessus. 2. Les administrations qui ont soumis des observations au titre du numéro 9.3 dans le délai de quatre mois suivant la date de publication de la Section spéciale API/A précitée, sont indiquées ci-dessous et le tableau contient un résumé de ces observations.	1. This Special Section is published in accordance with No. 9.5 of the Radio Regulations, in respect of the request for coordination published in the API/A Special Section referenced above. 2. Administrations that have submitted comments under No. 9.3 within four months of the date of publication of the mentioned API/A Special Section are listed below and the table contains a summary of the comments.	1. Esta Sección Especial se publica de conformidad con lo dispuesto en el número 9.5 del Reglamento de Radiocomunicaciones, en lo que respecta a la solicitud de coordinación publicada en la Sección Especial API/A antes citada. 2. Las administraciones que han presentado comentarios conforme al número 9.3 dentro de un plazo de cuatro meses a partir de la fecha de publicación de la Sección Especial API/A mencionada, se indican a continuación y en el cuadro se presenta un resumen de los comentarios.

ALG, AUS, BHR, BLR, CAN, CHN, CYP, D, E, EGY, F, HOL, J, KAZ, KOR, MLA, MRC, PAK, QAT, RUS, USA

Contains a list of administrations which have sent comments.

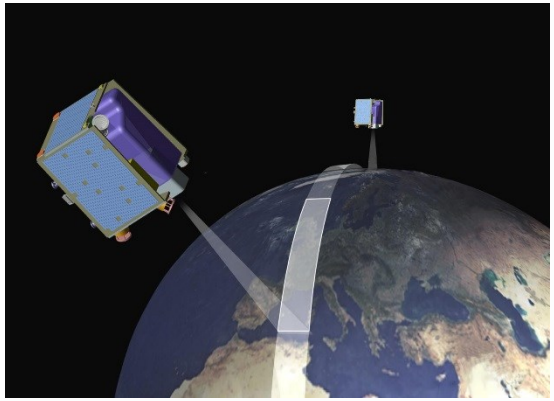
WRC-15: Earth exploration-satellite service (EESS) in 7-8 GHz

agenda item 1.11

- **Background**
  - The need for uplink large amounts of data for operations plans and dynamic spacecraft software modifications, which might not be accommodated by heavily used 2 025-2 110 MHz and 2 200-2 290 MHz TT&C bands
- **Results of WRC-15**
  - New primary EESS up link allocation limited to tracking, telemetry and command (TT&C) in the 7 190-7 250MHz band (34% increase)
  - Provision to protect existing and future stations in the fixed, mobile and space research services from the new allocation
- **Implications**
  - In combination with existing EESS downlink allocation in 8 025-8 400 MHz this new allocation will lead to simplified on-board architecture and operational concepts for future missions of EESS

WRC-15: Earth exploration-satellite service (active) in 8-9 GHz

agenda item 1.12



- **Background**
  - EESS (active) bandwidth in 8-9 GHz was 600MHz. Growing demand for higher resolution to satisfy global environmental monitoring raised the need to increase the bandwidth up to 1200 MHz in total.
- **Results of WRC-15**
  - New primary EESS(active) allocations totally of 600 MHz in the 9 200-9300MHz, 9 900-10 000MHz and 10.-10.4GHz bands (100% increase)
  - Provision to protect existing and future fixed and mobile stations
- **Implications**
  - Development of modern broadband sensing technologies and space-borne radars on active sensing EESS that provides high quality measurements in all weather conditions with enhanced applications for disaster relief and humanitarian aid, large-area coastal surveillance

WRC-15: Regulatory aspects for nano and picosatellites

- **WRC-15 Agenda Item 9.1.8 –**
  Regulatory aspects for nano- and picosatellites
  - WRC-12 adopted Resolution 757 (WRC-12) *Regulatory aspects for nanosatellites and picosatellites*.
  - This issue was studied in ITU-R WP-7B between 2012-2015, which came up with two reports:
    - ***ITU-R Report ITU-R SA.2312*** *- Characteristics, definitions and spectrum requirements of nanosatellites and picosatellites, as well as systems composed of such satellites; and*
    - ***ITU-R Report ITU-R SA.2348*** *- Current practice and procedures for notifying space networks currently applicable to nanosatellites and picosatellites;*
  - Conclusion was that there was no need for special regulatory arrangements for nano and picosatellites
- **WRC-15 Decision – Suppression of Resolution 757**

WRC-15: Resolution 659

- ***Studies to accommodate requirements in the space operation service for non-geostationary satellites with short duration missions***
  - assess the suitability of using existing allocations for the space operations service below 1 GHz to accommodate the telemetry, tracking and command (TT&C) requirements for non-geostationary satellites with short duration missions, and if those allocations are determined to be unsuitable
  - consider possible new allocations or an upgrade of the existing allocations to the SOS within the frequency ranges 150.05-174 MHz and 400.15-420 MHz while protecting the incumbent services, both in-band as well as in adjacent bands.
- **This study is being carried out in ITU-R WP-7B (http://www.itu.int/en/ITU-R/study-groups/rsg7/rwp7b/Pages/default.aspx) , and the results of the studies will be submitted for consideration by WRC-19 under Agenda item 1.7.**

WRC-19 Agenda item 1.7

- to study the spectrum needs for telemetry, tracking and command in the **space operation service** for non -GSO satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations, in accordance with Resolution **659** (WRC - 15)

- **Draft CPM report from WP7B**
  - **Method A** proposes no change to the Radio Regulations;
  - **Method B1** proposes a new SOS (Earth-to-space) allocation for NGSO SD systems in the frequency range **403-404 MHz**;
  - **Method B2** proposes a new SOS (Earth-to-space) allocation for NGSO SD systems in the frequency range **404-405 MHz**;
  - **Method C** proposes to use the SOS allocation in the frequency band **137-138 MHz** for downlink and the band **148-149.9 MHz** for uplink and to provide appropriate **associated regulatory provisions** in the Radio Regulations for telecommand links of NGSO SD missions.

WRC-19 Agenda item 7 issue M

- **Simplified regulatory regime for non-GSO satellite systems with short duration missions**

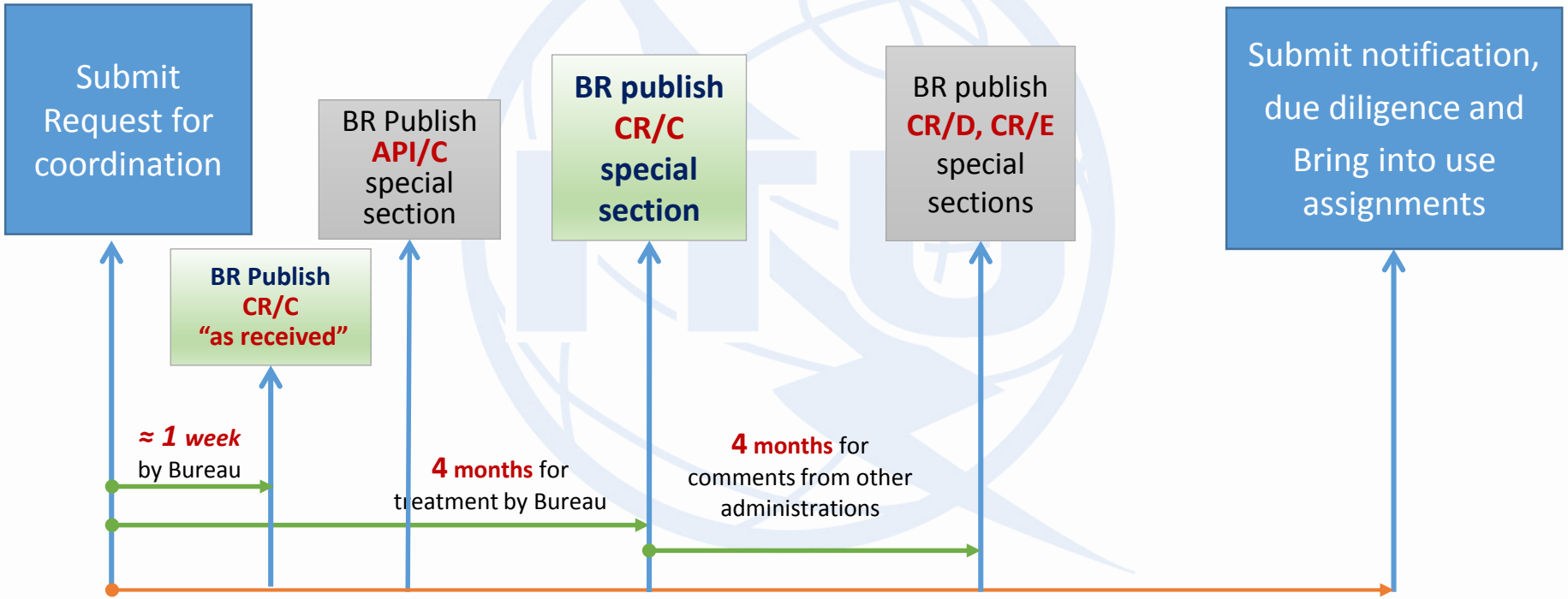
  - Draft **CPM-19-2** text
    - *Proposed a **simplified regime** through a Resolution*
    - ***Period of validity**: maximum of **3 years***

      *with **no possibility for extension***
    - *Further proposals expected at **CPM-19-2***

2019-02-18	2019-02-28	ITU-R	CPM19-2	Second Session of the Conference Preparatory Meeting for WRC-19	Switzerland [Geneva]

Calendar of ITU Events: https://www.itu.int/en/events/Pages/Calendar-Events.aspx?sector=ITU-R

Regulatory procedure for satellite networks subject to coordination



MAXIMUM 7 YEARS !

Coordination - *Provisions*

Elements	Relevant Provisions
Procedures	Articles 9 & 11
Submission format	Appendix 4
Technical & operational limits	Article 5, Articles 21 & 22 etc.
Criteria and methods to identify coordination requirements	Appendix 5 (Appendices 7 and 8)

Coordination of Satellite networks

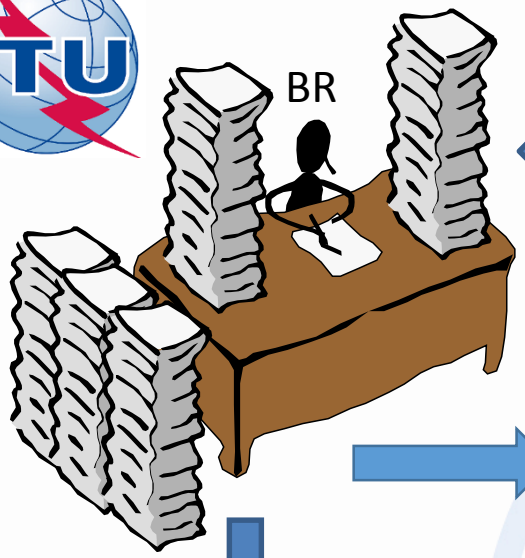
Procedure for effecting coordination

(Section II, Article 9)

- Contains (almost) all cases of coordination for non-planned satellite networks (GSO and Non-GSO), earth and terrestrial stations

- Not contained in Article 9

  (1) Non-Planed services w.r.t. Planned services
  (see Art 7 of AP30 and AP30A)
  (2) BSS sound in the 2.6 GHz w.r.t. Terrestrial Services
  (see Res 539)



Request for coordination
AP4 submission

CR publication

Set regulatory p

.. no permanent priority..
.. needs to take all practicable measures to facilitate the use of new systems by other countries…
…shall make every possible mutual effort to overcome difficulties……

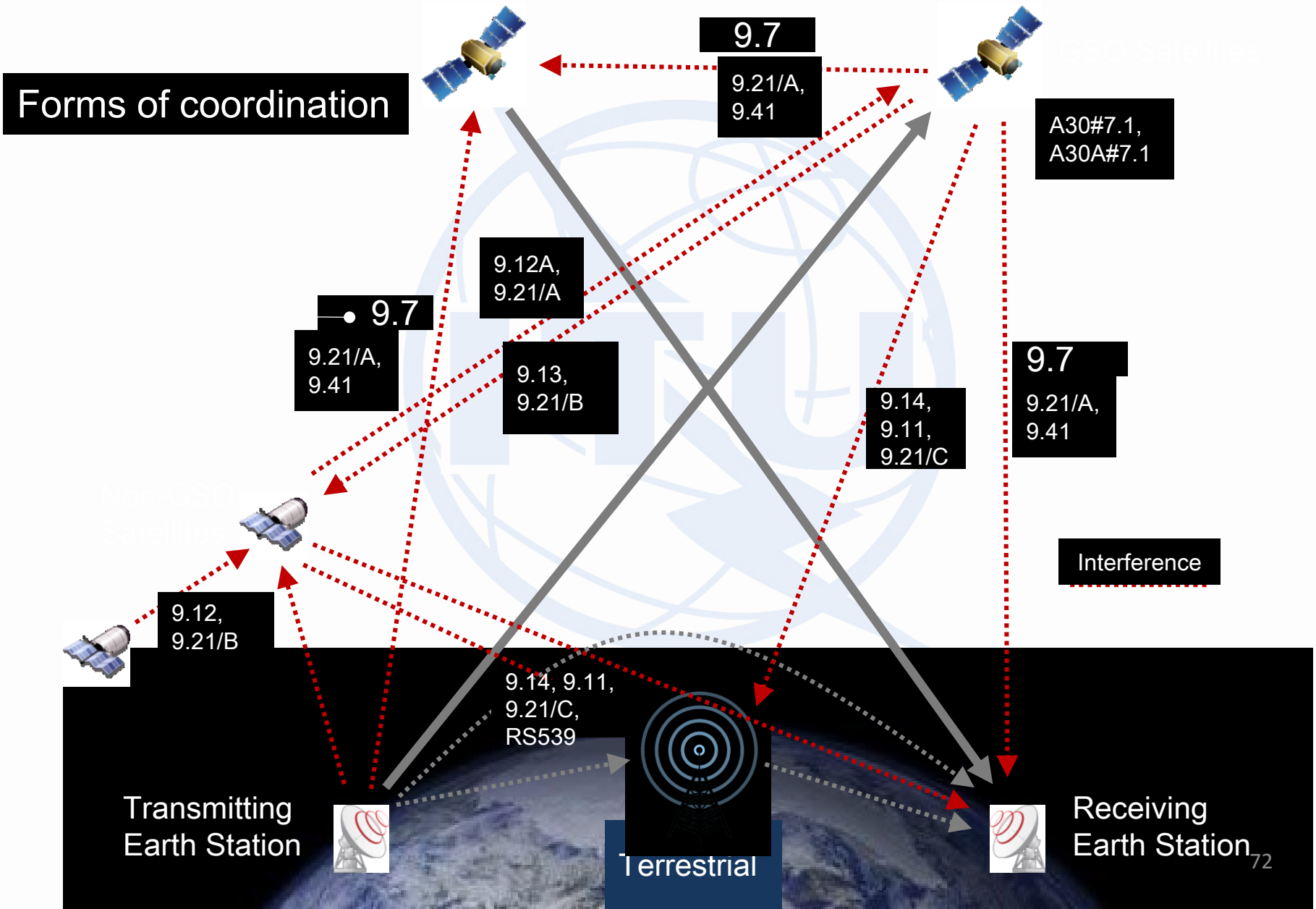
Technical & regulatory Exam
+
Coordination requirements

Findings

Affected adm

Set priority subject to Res.2 and No.9.53

Coordination requirements (*No. 9.36 of RR)*



Forms of Coordination

No.9.6:

Before BiU or Notify in cases below shall effect coordination (No.9.27/AP 5 -Table 5-1)

Cases	Provision
GSO to GSO	9.7, Art7 AP30/30A
Certain ES of GSO to NGSO	9.7A
NGSO to Certain ES of GSO	9.7B
BSS (GSO/NGSO) to Terrestrial Services	9.11, Res.539
NGSO to NGSO	9.11A/9.12
NGSO to GSO	9.11A/9.12A
GSO to NGSO	9.11A/9.13
NGSO/GSO to Terrestrial Services	9.11A/9.14
the requirement to seek the agreement of other administrations is included in a footnote to the Table of Allocation	9.21

Footnote refers Nos 9.11A or 9.21

No.9.11A (Coordination examined under No.11.32)

e.g. 5.208 **The use of the band 137-138 MHz by the mobile-satellite service is subject to coordination under No. 9.11A.**

See also RoP Table 9.11A-1; other space services to which 9.11A applies

No.9.21 (Agreement examined under No.11.31)

e.g. 5.286 **The band 449.75-450.25 MHz may be used for the space operation service (Earth-to-space) and the space research service (Earth-to-space), subject to agreement obtained under No. 9.21**

API/C

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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE	NICASAT-2A			SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	API/C/256
				BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2864/20.02.2018
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	NCG	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	166.2 W	NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN	117520334
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON / INFORMACIÓN RECIBIDA POR LA OFICINA EL					25.09.2017

Ces renseignements ont été extraits des renseignements communiqués conformément au numéro **9.30**, en application des numéros **9.1A/9.2C** du Règlement des Radiocommunications, et sont publiés par le Bureau conformément au numéro **9.1A**.	The information has been extracted from the information sent under No. **9.30,** pursuant to **Nos 9.1A/9.2C** of the Radio Regulations, and is published by the Radiocommunication Bureau in accordance with No. **9.1A.**	La información se ha extraído de la información remitida con arreglo al número **9.30**, de acuerdo con lo dispuesto en los números **9.1A/9.2C** del Reglamento de Radiocomunicaciones, y la Oficina de Radiocomunicaciones la publica de acuerdo con el número **9.1A**.

Advance publication information
extracted from the information sent
under No. 9.30.

API/C

SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص API/C/256

A	*A1a* Sat. Network	NICASAT-2A	*A1f1* Notify adm.	NCG	*A1f3* inter. Sat Org.		*BR1* Date of receipt	25.09.2017	*BR20* BR IFIC no.	2864
BR6a/BR6b Id. no.	117520334		*BR3a* Provision reference		9.1A		*BR2* Adm. serial no.			

A4a1 Orbital long. 166.2 W

BR1 Date of receipt	BR47 Frequency band (Mhz)		Regulatory Date Limits
	From	To	No.11.44
25.09.2017	3400	4200	25.09.2024
25.09.2017	5850	6725	25.09.2024
25.09.2017	10950	11200	25.09.2024
25.09.2017	11450	12200	25.09.2024
25.09.2017	13750	14500	25.09.2024
25.09.2017	17700	20200	25.09.2024
25.09.2017	24750	25250	25.09.2024
25.09.2017	27000	30000	25.09.2024
25.09.2017	37500	43500	25.09.2024
25.09.2017	47200	50200	25.09.2024
25.09.2017	50400	51400	25.09.2024
25.09.2017	71000	76000	25.09.2024
25.09.2017	81000	86000	25.09.2024

CR/C Special Section

The BR publishes the information (network data) in a Special Section of BR IFIC on DVD-ROM, which also contains,

RADIOCOMMUNICATION BUREAU COMMENTS

- **Relating to the Findings with respect to No.11.31 (No.9.35 examination)**

- **Relating to the coordination examination with respect to No.9.36**
  - **Administrations identified under all Forms of Coordination**
  - **List of Satellite networks (9.36.2)**
  - **Potentially Affected Administrations for some (9.36.1) for information only**

CR/C Special Section

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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE	ASIASAT-142.5Q	SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	CR/C/4521
STATION TERRIENNE EARTH STATION ESTACIÓN TERRENA	---	BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2863 / 06.02.2018
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE	CHN	LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL	142.5 E
		NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN	117520225

RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON / INFORMACIÓN RECIBIDA POR LA OFICINA EL **04.07.2017**

Cette demande de coordination, reçue par le Bureau des radiocommunications en vertu du numéro 9.30 du Règlement des radiocommunications, a été examinée au titre des numéros 9.35 et 9.36 et est publiée conformément au numéro 9.38. Elle est subordonnée au type de coordination indiqué dans la colonne de gauche par un X dans la case pertinente.

This request for coordination, received by the Radiocommunication Bureau pursuant to No. 9.30 of the Radio Regulations, has been examined under Nos. 9.35 and 9.36 and is published in accordance with No. 9.38. It is subject to the form of coordination indicated in the left-hand column by an X in the relevant box

Esta solicitud de coordinación, recibida por la Oficina de Radiocomunicaciones de conformidad con el punto Nº 9.30 del Reglamento de Radiocomunicaciones, se ha examinado de conformidad con los Nºs 9.35 y 9.36 y se publica de conformidad con el Nº 9.38. Está sujeta al formulario de coordinación indicado en la columna de la izquierda con una X en la casilla correspondiente.

Type de coordination mentionné dans le Tableau I / Form of coordination referred to in Table I / Forma de coordinación mencionada en el cuadro I

X	9.7
	9.7A
	9.7B
X	AP30#7.1
X	AP30A#7.1
	RS539
	RS33#3

Conformément aux numéros **9.50** à **9.52** du Règlement des radiocommunications, les Administrations identifiées dans le Tableau I ci-après sont priées de communiquer leur décision à l'Administration responsable et au Bureau avant la date limite indiquée ci-dessous.

In accordance with Nos. **9.50-9.52** of the Radio Regulations, the Administrations identified in Table I below are requested to communicate their decision to the Responsible administration and the Bureau by the deadline indicated below.

De conformidad con los Nºs **9.50-9.52** del Reglamento de Radiocomunicaciones, se solicita a las administraciones señaladas en el cuadro I a continuación que comuniquen su decisión a la administración responsable y a la Oficina antes del plazo indicado más abajo.

Type de coordination mentionné dans le Tableau II / Form of coordination referred to in Table II / Formulario de coordinación remitido al cuadro II

X	9.11	
X	9.11A	
		9.12
		9.12A
	X	9.13
		9.14
X	9.21/A	
X	9.21/B	
X	9.21/C	
	RS33#2.1	

Les Administrations, énumérées ou non-énumérées dans le Tableau II ci-après, qui n'acceptent pas la demande de coordination au titre des numéros **9.11** à **9.14**, **9.21** et **RS33#2.1**, sont priées de communiquer leurs observations à l'Administration responsable et au Bureau avant la date limite indiquée ci-dessous. Toute Administration qui ne réagira pas au titre du numéro **9.52** avant cette date limite sera considérée comme n'étant pas défavorablement influencée et, dans les cas couverts par les numéros **9.11** à **9.14** et **RS33#2.1**, les dispositions des numéros **9.48** et **9.49** s'appliqueront.

Administrations listed or not listed in Table II below, which do not agree to the request for coordination under Nos. **9.11** to **9.14**, **9.21** and **RS33#2.1** are requested to communicate their comments to the responsible administration and the Bureau by the deadline indicated below. Any administration not responding under No. **9.52** within this deadline shall be regarded as unaffected and, in the cases of Nos. **9.11** to **9.14** and **RS33#2.1**, the provisions of Nos. **9.48** and **9.49** shall apply.

Se invita a las administraciones, enumeradas o no en el cuadro II, que no estén de acuerdo con la solicitud de coordinación de conformidad con los Nºs **9.11** a **9.14**, **9.21** y **RS33#2.1** que comuniquen sus observaciones a la administración responsable y a la Oficina dentro del plazo indicado más abajo. Se considerará que toda administración que no responda de conformidad con el Nº **9.52** dentro del plazo señalado, no está afectada y, en el caso de los Nºs **9.11** a **9.14** y **RS33#2.1**, se aplicarán las disposiciones de los Nºs **9.48** y **9.49**

DATE LIMITE POUR LA DÉCISION / EXPIRY DATE FOR DECISION / FECHA LÍMITE PARA LA DECISIÓN **06.06.2018**

CR/C Special Section

Page 3

Tableau I /Table I /Cuadro I /表一 /Таблица I / I الجدول				
Disposition / Provision / Disposición / 条款 / Положение / الحكم		Résumé des conditions régissant la coordination	Summary of coordination requirements	Resumen de los requisitos de coordinación
		协调要求概述	Сводные потребности в координации	موجز بمتطلبات التنسيق
X	9.7	ARG, ARM, ARS/ARB, ARS, AUS, AZE, B, BEL, BLR, BOL, BUL, CAN, CLM, CYP, CZE, D, E, EGY, ETH, F/EUT, F, G, GRC, HOL, I, IND, INS, IRN, IRQ, ISR, J, KAZ, KOR, LAO, LUX, MAU, MCO, MEX, MLA, MLD, MNG, NCG, NOR, NZL, PAK, PNG, QAT, RUS/IK, RUS, S, SNG, SUI, THA, TON, TUR, UAE, UKR, USA, VTN		
	9.7A			
	9.7B			
X	AP30#7.1	CAN, F, G, HOL, ISR, J, LUX, NCG, RUS/IK, RUS, UAE, USA		
X	AP30A#7.1	EGY, F, G, HOL, LUX, QAT, RUS/IK, UAE		
	RS539			
	RS33#3			

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Tableau II /Table II /Cuadro II /表二 /Таблица II / II الجدول					
Disposition / Provision / Disposición / 条款 / Положение / الحكم			Administrations susceptibles d'être défavorablement influencées (à titre d'information uniquement, voir numéro 9.36.1)	Potentially affected administrations (for information only, see No. 9.36.1)	Administraciones posiblemente afectadas (sólo para información, véase el N° 9.36.1)
			可能受影响的主管部门(仅供参考，见第 9.36.1款)	Потенциально затрагиваемые администрации (исключительно для информации, см. п. 9.36.1)	إدارات يحتمل أن تتأثر تأثراً غير مؤات (انظر الرقم 1.36.9، على سبيل الاطلاع فقط)
X	9.11				
X	9.11A				
		9.12			
		9.12A			
	X	9.13	AUS, CAN, CYP, D, F, G, HOL, IND, LIE, LUX, NOR, NZL, RUS/IK, RUS, USA		
		9.14			
X	9.21/A[1]		ARS/ARB, AUS, AZE, B, BEL, BLR, CAN, CLM, CYP, D, E, EGY, F, G, HOL, I, INS, IRN, IRQ, ISR, J, KOR, LAO, LUX, MCO, MLA, MLD, NOR, NZL, PAK, PNG, QAT, RUS/IK, RUS, S, THA, TUR, UAE, UKR, USA		
X	9.21/B[1]		CAN, NOR		
X	9.21/C[1]		AUS, INS, IRN, J, KAZ, KGZ, KOR, KRE, LAO, MLA, NZL, RUS, SNG, USA/GUM, USA/HWA, UZB		
	RS33#2.1				

[1] 9.21/A, 9.21/B et 9.21/C – au titre du numéro 9.21, administrations ayant des réseaux OSG, des réseaux non-OSG et des stations de Terre, respectivement.
[1] 9.21/A, 9.21/B and 9.21/C – Under No. 9.21, administrations with GSO networks, Non-GSO networks and terrestrial stations, respectively.
[1] 9.21/A, 9.21/B y 9.21/C – De conformidad con el Nº 9.21, administraciones con redes OSG, redes no OSG y estaciones terrestres, respectivamente.
[1] 9.21/A, 9.21/B 和 9.21/C – 根据第9.21款, 分别为有对地静止卫星轨道网络、非对地静止卫星轨道网络和地面站的主管部门
[1] 9.21/A, 9.21/B и 9.21/C – в соответствии с п. 9.21 администрации, имеющие сети ГСО, сети НГСО и наземные станции, соответственно.
[1] 9.21/A و9.21/B و9.21/C – بموجب الرقم 21.9، إدارات لها شبكات مستقرة بالنسبة إلى الأرض وشبكات غير مستقرة بالنسبة إلى الأرض ومحطات للأرض على التوالي.

Comment on CR/C

- **An administration having received a request for coordination (through publication of CR/C) <u>shall examine</u> the matter with respect to interference which may be caused to, or caused by, its own assignments**
- **<u>inform</u> the requesting administration and the BR <u>within four months</u> from the date of publication of the BR IFIC of either:**
  - **its agreement to the proposed use, or**
  - **its disagreement, giving <u>reasons for the disagreement</u>**

Final Coordination Requirement

Special Section	Provision	Methods	Final/Subject
List of Adms in CR/C	9.7, 9.7A, 9.7B, Art7 of AP30/30A	ΔT/T, pfd mask, Band Overlap	Final
List of Adms in CR/C	9.7	Coordination Arc	Subject to request for inclusion or exclusion under Nos.9.41/9.42
List of Adms in CR/F	9.7	Coordination Arc, pfd mask	Final, 9.41 does not apply
List of Adms in CR/C	9.11 to 9.14, 9.21	Band Overlap, eirp, pfd mask	Subject to comment under No.9.52

CR/D (No. 9.53A)

For coordination request under Nos. 9.11 to 9.14 and 9.21:

- **An Adm informs its disagreement under No.9.52 using SpaceCom within 4 month**
- **No disagreement within 4 month means agreement to the proposed assignments in CR/C (No.9.52C)**
- **CR/D contains list of administrations having submitted their disagreement (No.9.53A)**
- **Final List of coordination requirements (Adms) published in CR/D**

CR/D

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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE **PESSE-11E-KA**	SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º **CR/D/3417**
STATION TERRIENNE EARTH STA ESTACIÓN	BR IFIC / DATE

ADM. RESP
RESPONSI
ADM. RESP

	9.11
X	9.11A
X	
	9.21/A
	9.21/B
	9.21/C
	RS33#2.1

RÉFÉRENCE DE LA SECTION SPÉCIALE (BR IFIC
SPECIAL SECTION REFERENCE (BR IFIC / DATE)
REFERENCIA DE LA SECCIÓN ESPECIAL (BR IFI

Tableau I /Table I /Cuadro I /表一/ Таблица I / I الجدول

Disposition / Provision / Disposición / 条款 / Положение / الحكم			Récapitulatif des coordinations à effectuer	Summary of coordination requirements	Resumen de los requisitos de coordinación
	9.11				
X	9.11A				
		9.12			
		9.12A			
	X	9.13	CA		
		9.14			
	9.21A				
	9.21B				
	9.21C				
	RS33#2.1				

Tableau II / Table II / Cuadro II / 表二 / Таблица II / IIالجدول

Nécessité d'une coordination au niveau du groupe / Coordination requirements at group level / Requisitos de coordinación a nivel de grupo
在组的层次进行的协调 / Требования на координацию на уровне группы / متطلبات التنسيق على مستوى المجموعة

B1a Beam designation	B2 Emi-Rcp	BR7a Group id.	BR47 Frequency band (MHz)	No.9.13										
KAUR	R	116823605	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823607	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823609	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823611	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823613	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823615	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823617	28600.000 - 29500.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823619	29250.000 - 29265.000	CAN	CHN	CYP	D	F	G	LIE	LUX	NOR	USA	
KADR	E	116823575	18800.000 - 19700.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823579	18800.000 - 19700.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823583	18800.000 - 19700.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS
		116823587	18800.000 - 19700.000	CAN USA	CHN	CYP	D	F	G	LIE	LUX	NOR	NZL	RUS

CR/E (No. 9.42)

- **An Adm requests for inclusion or exclusion of administration/network as coordination requirement under Nos.9.41 using SpaceCom within 4 month**
- **No request within 4 month means agreement to the requirements published in CR/C (No.9.43)**
- **CR/E contains list of administrations/ satellite networks, requested and confirmed by the Bureau for inclusion (No.9.42)**
- **Final List of coordination requirements (Adms and networks) published in**

CR/E + CR/C

- **During coordination additional networks can be included with mutual agreement (No.9.42.1)**

CR/E

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RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE	ALGSAT-24.8W	SECTION SPÉCIALE Nº SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	CR/E/1474
STATION TERRIENNE EARTH STATION ESTACIÓN TERRENA	---	BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA	2863 / 06.02.2018
ADM. RESPONSABL RESPONSIBLE ADM ADM. RESPONSABL			

I. Nécessit
一、需要在

Administra
B1a Beam designation
AL1R

RÉFÉRENCE DE LA
SPECIAL SECTION F
REFERENCIA DE LA

Liste des réseaux à satellite
卫星网络清单

II. List of satellite networks
II. Список спутниковых сетей

II. Lista de redes de satélite
قائمة بالشبكات الساتلية

Liste des réseaux à satellite pour lesquels Delta T/T est supérieur à 6% mais qui ne sont PAS dans l'arc de coordination (au titre du N° 9.7)
List of satellite networks for which Delta T/T > 6% but are NOT within the coordination arc (under No. 9.7)
Lista de redes de satélites para las cuales ΔT/T > 6% pero NO se encuentran dentro del arco de coordinación (según el N.° 9.7)
Delta T/T > 6%但并不属于协调弧范围的卫星网络清单（依据 9.7）
Перечень спутниковых сетей, для которых Delta T/T > 6%, однако НЕ находится в пределах координационной дуги (согласно № 9.7)
قائمة الشبكات الساتلية التي تكون فيها النسبة ΔT/T %6 < ولكنها ليست ضمن قوس التنسيق (بموجب الرقم 7.9)

A1f1 Notif. adm.	A1f3 Inter. sat. org.	A1a Sat. Network	A4a1 Orbital long.	BR3b Category of notif.	BR25 A/T	BR6a Id. no.	BR26 Causing interference	BR27 Receiving interference
EGY		EGJAN1A	7 W	C	A	114520032	C	
		EGJAN2A	6 W	C	A	114520079	C	
		EGJAN3A	2 W	C	A	114520080	C	
		EGJAN4A	11 E	C	A	114520081	C	
		EGJAN5A	15 E	C	A	114520082	C	
		EGJAN6A	18 E	C	A	114520083	C	
		EGJAN7A	21 E	C	A	114520084	C	
		EGJAN8A	23 E	C	A	114520085	C	
G		UKMMSAT-A3	33.5 W	C	A	112520178	C	R
UAE		EMARSAT-10F	44 E	C	A	114520194	C	
		EMARSAT-10S	98.5 E	C	A	114520211	C	
		EMARSAT-11G/M	127 E	C	A	115520080	C	
		EMARSAT-11X	73 W	C	A	115520074	C	
		EMARSAT-12D-M	130.9 W	C	A	116520037	C	
		EMARSAT-12F	44 E	C	A	116520046	C	
		EMARSAT-12Y-M	9 W	C	A	116520036	C	
		EMARSAT-13P	123 E	C	A	116520291	C	
		EMARSAT-13V-M	8 W	C	A	116520378	C	
		EMARSAT-9G/M	127 E	C	A	112520445	C	
		EMARSAT-9I	79 E	C	A	113520106	C	

Notification for Recording in MIFR

Assignments (final characteristics) have to be notified under **Article 11** to be recorded in the MIFR for international recognition <u>within the regulatory period</u>

- In order to be recorded in the MIFR

Assignments shall

- Be in conformity with Allocation Table and Other provisions listed in RoP under No.11.31 (No. 11.31 examination)
- Complete required coordination requirements (No. 11.32 examination)

Or

- Be favourable in examination on probability of harmful interference (C/I) (No.11.32A examination)

Article 11 Notification

- Assignments can also be recorded in the MIFR if requested:
  - Under Nos.4.4/8.4
    - Unfavourable finding under No.11.31
    - Information only – no international recognition
  - Under No.11.41
    - Unfavourable finding under Nos11.32 and 11.32A
    - Requirement of No.11.41.2 (indication of coordination effort) and No.11.42 (elimination of harmful interference)

- Bringing into use of assignments have to be confirmed in the notification process (11.47 and 11.44B) within the regulatory period

Publication in Parts of the BR IFIC

- Part I-S - Acknowledgement of receipt, particulars of complete frequency assignment notices

- Part II-S - Findings (mostly favouralbe) resulting in the recording of the frequency assignment in the MIFR;

- Part III-S - Unfavourable Findings resulting in the return of the notice to the notifying administration.

Due Diligence – Res 49

- **Resolution 49:**
  - To address the problem of orbit and spectrum reservation without actual use
  - Applies to satellite networks in the FSS, MSS, BSS that are subject to coordination procedure
  - Information (Annex 2 of Res 49) on Identity of the satellite network, Spacecraft manufacturer and Launch services provider is required
  - Information must be submitted within the regulatory deadline
- **Resolution 552**
  - with specific requirements, only applicable to BSS in R1 & R3 in 21.4 - 22GHz
  - Information (Annex 2 of Res 552) must be submitted within 30 days after the commencement (or resumption) of the use

International regulatory framework:
Lengthy & complex procedures
Lack of incentive to review underused spectrum/orbital positions

Spectrum/orbit resource:
Scarcity due to thousands of filings

Consequences:
Difficulty to complete coordination
Multiple-filing submissions
Operation without prior coordination
Fait-accompli approach
Fictitious recorded assignments

Free online ITU-R help & documents

- **Small Satellite Support**
  - http://www.itu.int/en/ITU-R/space/Pages/supportsmallsat.aspx
- **BR space website**
  - http://www.itu.int/en/ITU-R/space)
- **SNL online** ***(basic reference info concerning space stations)***
  - http://www.itu.int/ITU-R/space/snl
- **SNS online – detailed information concerning satellite networks**
  - *TIES account required, need to be an ITU member (member state, ITU-R sector member, associate or academia)*
  - http://www.itu.int/sns/

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https://www.itu.int/en/publications/ITU-R/Pages/default.aspx

- **Handbook for amateur and amateur-satellite services**

https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-HDB-52-2014&media=electronic

- **Handbook for earth exploration satellite service**

https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-HDB-56-2011&media=electronic

- **Handbook for meteorological-satellite service**

https://www.itu.int/en/publications/ITU-R/Pages/publications.aspx?lang=en&media=electronic&parent=R-HDB-45-2017

- **Handbook for space research service**

https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-HDB-43-2013&media=electronic

Free online ITU-R documents & events

- **ITU Radio Regulations @ 2016**
  http://www.itu.int/pub/R-REG-RR/
- **ITU RoP** http://www.itu.int/pub/R-REG-ROP/en
- **ITU-R Recommendations**
  http://www.itu.int/publ/R-REC/
- **ITU-R Reports** https://www.itu.int/pub/R-REP/
- **WRC-19**
  https://www.itu.int/en/ITU-R/conferences/wrc/2019/
- **CPM19-2**
  https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/cpm-19.aspx#

Questions ?