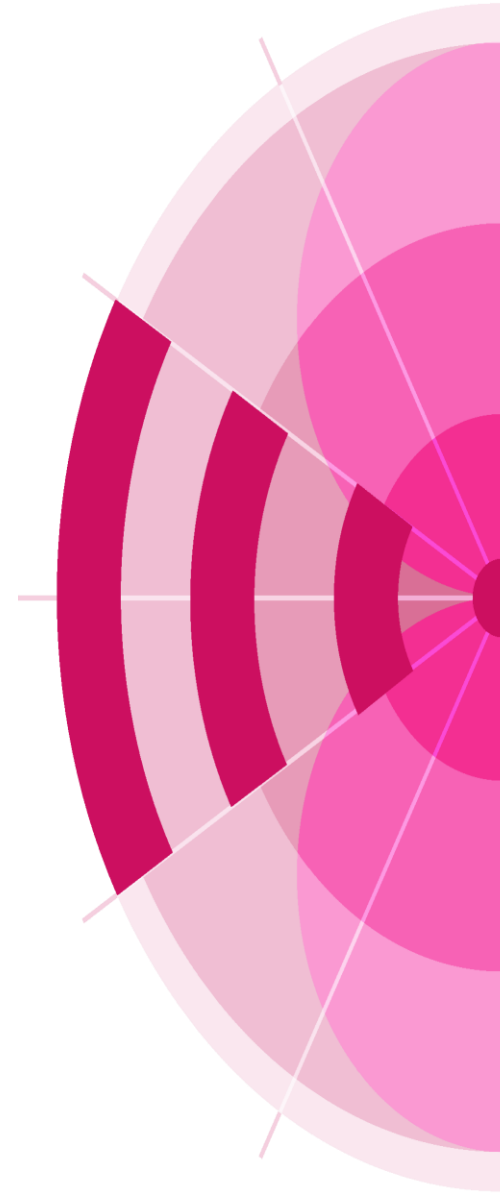


**ITUWRS**  
GENEVA2020

# Harmful Interference to Space Services



1. **Current Situation**
2. **ITU Initiatives to tackle the problem of interference**
3. **Overview of Procedure in cases of Harmful Interference.**
4. **Use of SIRRS online application for reporting .**
5. **Conclusions**

**50+** years of Space Regulation

**68** Members States with access to Space Resources

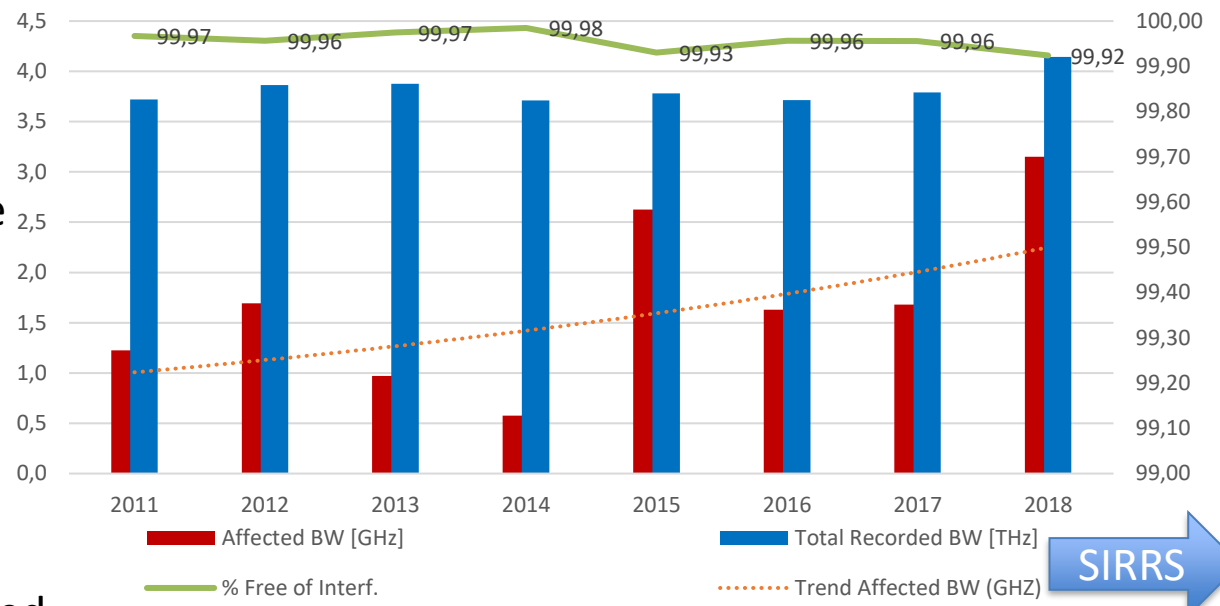
**1700** Satellite Networks Operating

**4 THz** Global Spectrum Coordinated and Recorded

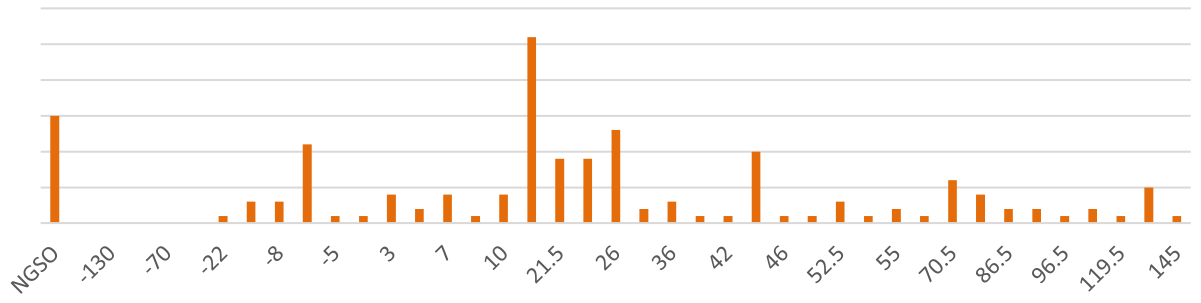
**99.94%** Spectrum Free of Harmful Interference

**< 0.1 %** Interference Variation per year

### GSO Spectrum Reported as free of Harmful Interference



### RFI Distribution along GSO



# Harmful Interference Reported to BR (1/2)

## ❑ Fixed Satellite Service, Broadcasting Satellite Service and associated Space Operations Functions in the frequency bands 6/4 GHz and 14-17-18/10-12 GHz

**Cause:** lack of coordination, unauthorized use, unnecessary emissions as defined in No. 15.1 of the Radio Regulations (typically a high-power unmodulated carrier) and technical/operational failures

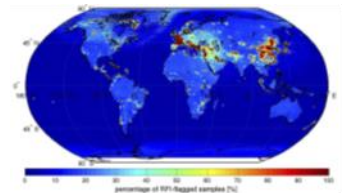
**Impact:**



## ❑ Earth Exploration Satellite Service ( passive ) in 1400-1427 MHz band

**Cause:** 1) Unwanted emissions from radars and other radio devices operating in adjacent bands and exceeding levels contained in Resolution 750 (Rev.WRC-15),  
2) Unauthorized use of CCTV wireless devices making illegal use of the passive band in contradiction with No. 5.340 of the Radio Regulations,  
3) Intermediate Frequency Radiation from BSS receivers due to poor shielding of cables and connectors.

**Impact:** loss of data or collection of wrong information about our planet



Source : BR Director's Report to WRC-19 – Annex 2 to Part-1

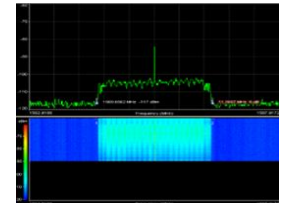
# Harmful Interference Reported to BR (2/2)



**Radio Navigation Satellite Service (RNSS) in the frequency bands  $1\ 575.42 \pm 15.345$  MHz and  $1\ 227.60 \pm 11$  MHz**

**Cause :** 1) Use of transmitting devices without the required authorization or license  
2) Military exercises or operations near zones of conflict

**Impact:**



**Radio Regulations No. 15.28 : Absolute International Protection of Transmissions used for Safety and Regularity of Flights**

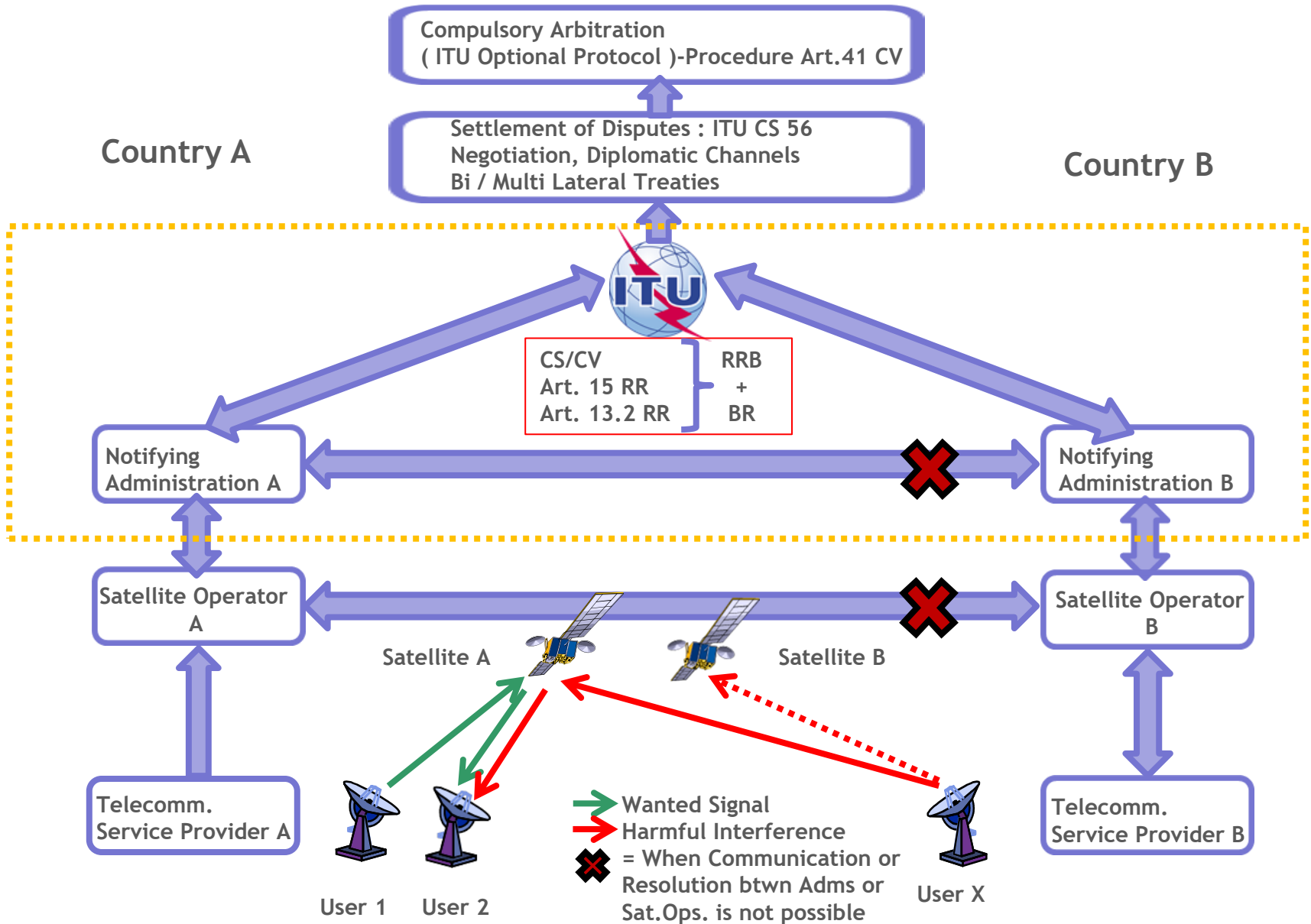
**❑ Mobile-Satellite-Service in the frequency bands  $1\ 626.5-1\ 660.5$  MHz,  $1\ 980-2\ 010$  MHz and  $2\ 670-2\ 690$  MHz**

**❑ Radio Astronomy Service in the frequency band  $1610.6-1613.8$  MHz**

# How ITU is tackling the interference problem ?

- ❑ **Prevention:** ITU-R Study Groups → RadioAssembly → World RadioConference → BR and Administrations apply RadioRegs (Coordination and Notification Procedures )
- ❑ **Correction:** Art 15 of RR → Radio Regulations Board
- ❑ **SIRRS** online application to facilitate Reporting and provide Assistance ( <https://www.itu.int/en/ITU-R/space/SIRRS/Pages/default.aspx> )
- ❑ **Informative Fora** to raise awareness of the impact of the interference and the need of cooperation to resolve it, presenting and discussing technical regulatory solutions.
- ❑ **International Monitoring System**
- ❑ **ITU-R Recommendations, Reports and Handbooks**

# Schema of Actions in case of Harmful Interference





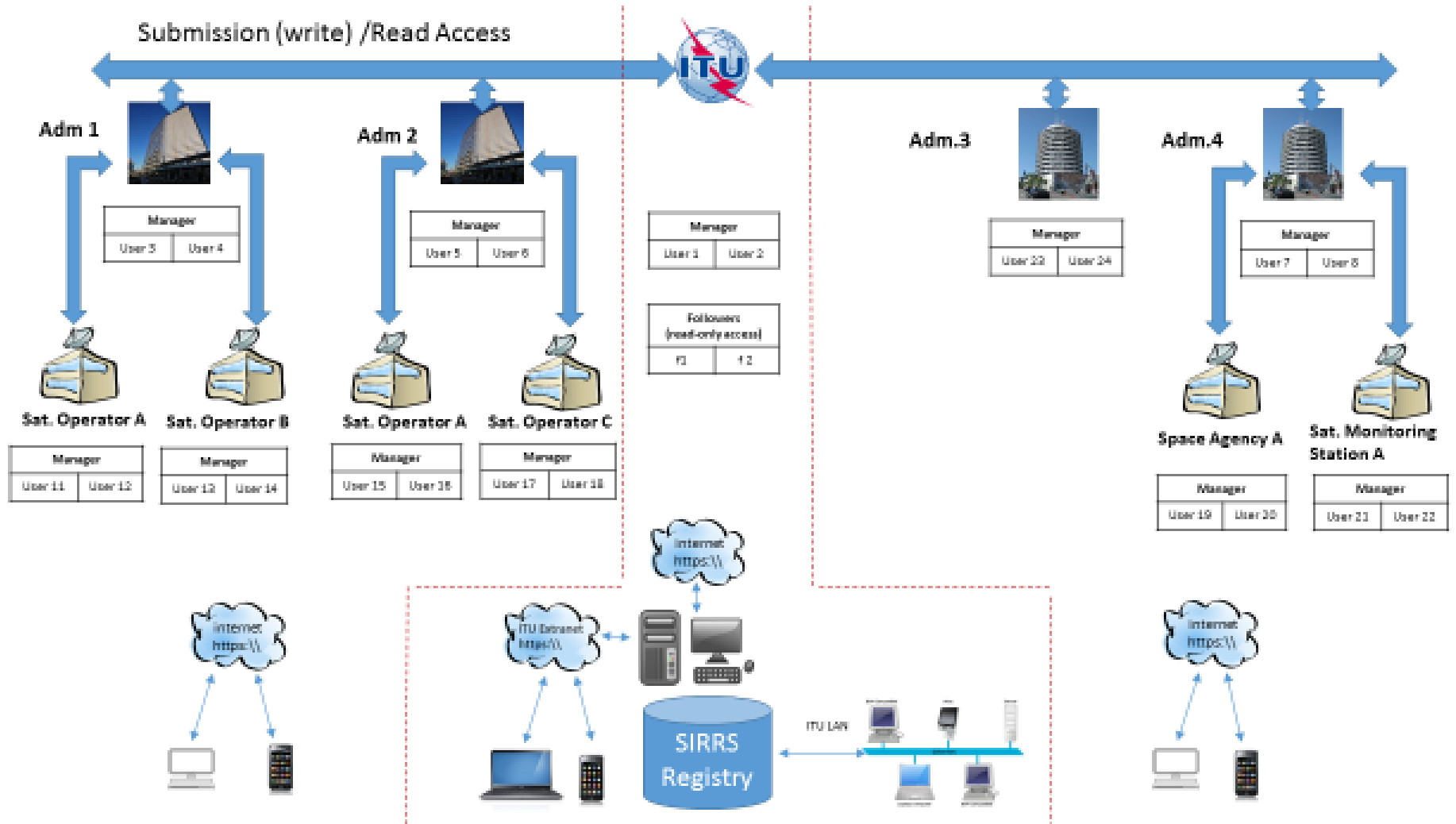
# Satellite Interference Reporting and Resolution System



193 Member States !

RES 186 PP (rev.2018)

Submission (write) /Read Access







What would you like to search for?

- Home
- ITU
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- Radiocommunication
- Standardization
- Development
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- Members' Zone
- Join ITU

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- Events
- Databases & e-Services
- Publications
- Space
- Terrestrial
- Study Groups
- Regional Presence
- Join ITU-R



# Space Services Department

YOU ARE HERE HOME > ITU-R > SPACE SERVICES > SIRRS

SHARE

## SIRRS

### Satellite Interference Reporting and Resolution System

*( Release for Official Use as of 1<sup>st</sup> September 2018 )*

This online application has been developed by the Radiocommunication Bureau in response to Resolution 186 of ITU Plenipotentiary Conference 2014 with the aim to facilitate Administrations and space stakeholders to report a case of harmful interference affecting space services, to request assistance from the BR, to be informed in case a radio station under your jurisdiction is causing harmful interference to space services of other Administrations, and to exchange all necessary information among the concerned parties involved in the case.

In order to be able to use the system, a user account must be open as indicated below:

#### Nomination of Administration and Intergovernmental Satellite Organization Managers. Assignment of users.

The Administrations must nominate to the Bureau an Administration Manager role before accessing the system. The assigned manager will then add other users as administration or operator roles for their Administration.

SIRRS has 6 categories of user roles:

- (1) Administration Manager
- (2) Administration User
- (3) Operator Manager
- (4) Operator User
- (5) Intergovernmental Satellite Organization Manager
- (6) Intergovernmental Satellite Organization User

(see Circular Letter ITU-R CR. 428 for more details on roles. Intergovernmental Satellite Organization Manager and User roles have same treatment than Administration Manager and User respectively).

LOGIN I forgot my password...

- References:**
- Circular Letter CR/435 of 28.08.2018
  - Circular Letter CR/428 of 13.03.2018
  - List of Administrations' Focal Points
  - Quick Guide for Submitting a Report and Response using SIRRS
  - Questions & Answers about SIRRS
  - Guide on User's Account Management

**Support:**

SIRRS@itu.int

TIES Services

# Implemented !

**Official use since 01 Sept. 2018**

**URL:** <https://www.itu.int/en/ITU-R/space/SIRRS>

# Sign Up Now !

3 Easy Steps to Start



**See Circular letter CR/435 [here](#)**



### Create New Interference Report

← Back to drafts Save draft

**\*mandatory element**

**Report information** Ref.: Not applied

Title:

Ref. Administration:

**Stations Causing Interference**

+ Add Station

**Stations Interfered With**

Interfering Scenario:

Station type	Earth	<input type="text"/>	<input type="text"/>
Direction	TX	<input type="text"/>	<input type="text"/>

Station type	Space > Geo stationary	<input type="text"/>	<input type="text"/>
Direction	RX	<input type="text"/>	<input type="text"/>

**Frequency Assignments**

+ Add frequency assignment

**Upload documents**

Letter from Affected Administration:  Upload

Interference Signal Geolocation Plot:  Upload

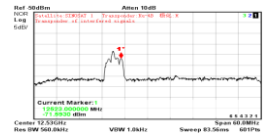
Interfered and Interfering Signal Scan Plots:  Upload

Information on Passive Sensors-EESS (REC ITU-R RS. [RFI-SENSOR\_REPORTING]):  Upload

+ Add additional document

# Steps to Follow:

- 1) Station Causing Interference
- 2) Interference Scenario ( Uplink, Downlink, RAS, EESS-Passive ) and Characteristics of Station Interfered with
- 3) Affected Frequency Assignment(s)
- 4) Upload Documents:
  - Correspondences
  - Scan Plot
  - Geolocation Plot
  - Other Forms, Graphs, Analysis, etc
  - Info on Passive Sensors in the Format of REC.ITU-R RS 2106-0





# Steps to Follow:



Satellite Interference Reporting and Resolution System (SIRRS)

ciccoros

ARG

AdministrationManager

- Home
- Reports
- New report**
- Users list
- Add user

## Create New Interference Report

### Report information

Ref. Administration: ARG

### Stations Causing Interference

Add Station

### Stations Interfered With

Interference Scenario:

- Uplink
- Downlink
- Radio Astronomy

### Frequency Assignments

Add frequency assignment

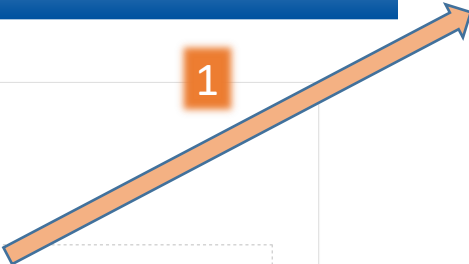
### Upload documents

Letter from Affected Administration:\*

Interference Signal Geolocation Plot:

Interfered and Interfering Signal Scan Plots:

1



## Add Station Causing Interference

### Characteristics

Station type: Earth

Name: [a]

Class of Station: [g]

### Location [h]

Longitude: 0.04559705414

Latitude: 11.3829798470

Description:



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### Administration(s) having jurisdiction\*

### Measured Characteristics:

Frequencies [b]:  MHz

Class of Emission [c]:

Bandwidth [d]: MHz

Field Strength or Power Flux Density of Interfering Carrier [e]

Polarization [f]: Other

### Additional information

Date and Time (UTC) of Interference [i,s,ej]:

### Nature of Interference [u]:

Type of carrier:

- Analog Modulated Carrier
- Burst Signal
- CW - Clean Carrier
- Digital Modulated Carrier
- Frequency Hopping
- Frequency sweeping

Source:

- Cross Polarization
- Co-Channel
- Intermodulation
- Unwanted emissions
- Antenna mispointing
- Adjacent Satellite Interference
- Adjacent Carrier Interference
- Malfunctioning equipment
- Insufficient cable shielding
- Reference to RR No.15, 1 (unnecessary emissions)
- Other (please specify)

Facility which made the above measurements [j]:

Longitude:

Latitude:



Create New Interference Report

\*mandatory element

Report information

Ref.: Not applied

Title:

Ref. Administration:

Stations Causing Interference\*

Stations Interfered With\*

Interfering Scenario:

Station type	Earth	<input type="button" value="edit"/>	<input type="button" value="delete"/>
Direction	TX		

Station type	Space > Geo stationary	<input type="button" value="edit"/>	<input type="button" value="delete"/>
Direction	RX		

Frequency Assignments\*

Upload documents

Letter from Affected Administration:\*

Interference Signal Geolocation Plot:

2

+ Add Station Interfered With

Characteristics

Name [i]:

Associated Administration:\*

Location [o]\*

Longitude:\*

Latitude:\*



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+ Add Station Interfered With

Characteristics

Station type:  Geo-stationary satellite  Non geo-stationary satellite

Name [q,t]:

Associated Administration:\*

Associated ITU Satellite Name:\*

Associated Downlink Frequency:  MHz

Associated Downlink Polarization:

Location [o]\*



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- Home
- Reports
- New report
- Users list
- Add user

### Create New Interference Report

**Report information**

Ref. Administration:

**Stations Causing Interference**

**Stations Interfered With**

Interference Scenario:

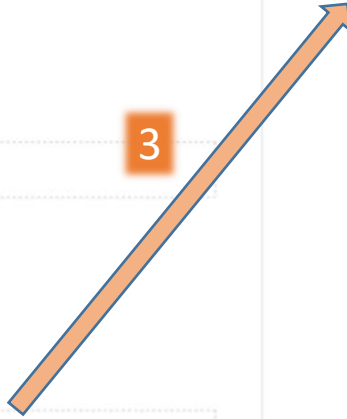
**Frequency Assignments**

**Upload documents**

Letter from Affected Administration:

Interference Signal Geolocation Plot:

Interfered and Interfering Signal Scan Plots:



### + Add Affected Frequency Assignment

Assigned frequency [k, l]:\*  MHz

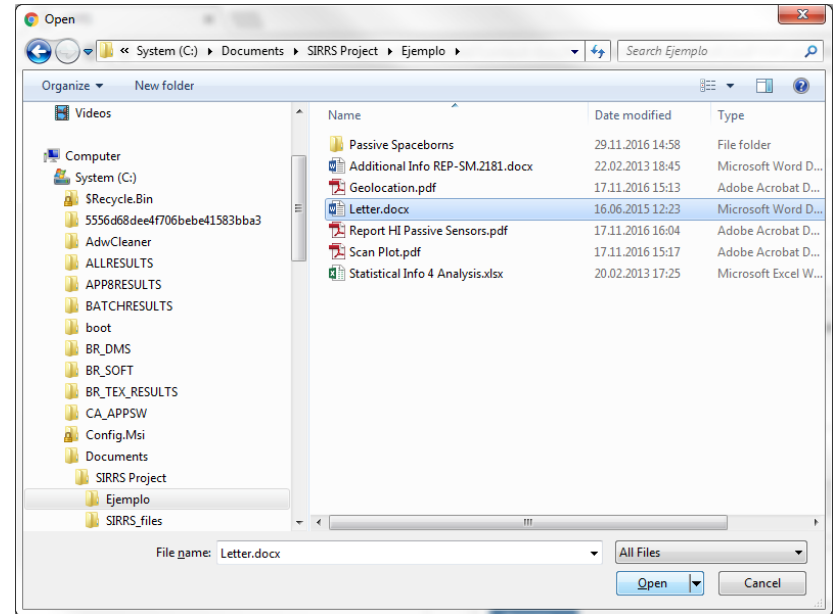
Bandwidth [n]:\*  MHz

Polarization [w]:

Nature of Service\*

Class of emission [m]:

Field Strength or Power Flux Density of Wanted carrier [v]:



# In Summary:

- ❑ **Main ITU-R Objective is to ensure operations free of harmful interference (successful mission, quality of service and return of investment )**
- ❑ **Spectrum Free of Harmful Interference is Stable but higher risk of interference due to complex RFI dynamics from emerging systems is expected.**
- ❑ **Reporting Harmful Interference is key to assess actual situation**
- ❑ **Sin-Up in SIRRS and use it if not yet done !**
- ❑ **Different Services affected due to different causes. However, a common solution approach applies to keep the interference to a minimum level :**
  - **Regulation**
  - **Technology**
  - **Cooperation among Administrations and Space Stakeholders**

# Thank you!

ITU – Radiocommunication Bureau

Questions to [sirrs@itu.int](mailto:sirrs@itu.int) or [jorge.ciccorossi@itu.int](mailto:jorge.ciccorossi@itu.int)

