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ITU Regulations and Actions to protect the Radio Navigation Satellite Service (RNSS) from Harmful Interference

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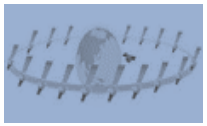
Topics:

- Space Sector and The Current Situation of harmful interference to RNSS
- Procedure to follow in case of harmful interference
- Key Binding Regulatory Provisions to protect RNSS
- ITU latest Actions

ITU and Space Services

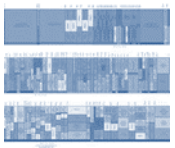
194 Member States

62 years of Space Regulation

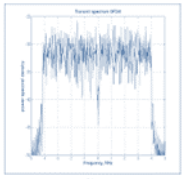


74 Members States with access to Space Resources

2640 Satellite Networks Operating



6.8 THz of Spectrum Coordinated and Recorded



99.89% Spectrum Free of Harmful Interference

< 0.1 % Interference Variation per year

Harmful Interference Reported to ITU

- 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
- Earth Exploration Satellite Service (passive) in 1400-1427 MHz band
- 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
- **Radio Navigation Satellite Service (RNSS) in the 1164-1215 MHz and 1559-1610 MHz frequency bands**

Two types of sources of harmful interference affecting RNSS in the 1164-1215 MHz and 1559-1610 MHz frequency bands

1) Use of transmitting devices (jammers) without authorization

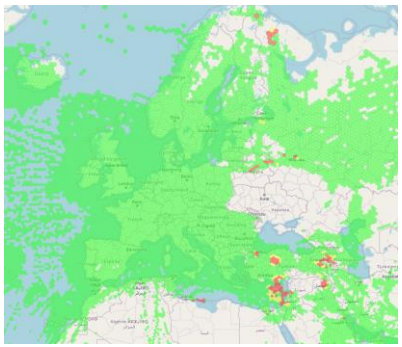
- The risk of impacting safety and regularity of flights is spread all over the world.
- It is not limited to areas near zones of armed conflicts

2) Military exercises or operations near zones of conflict

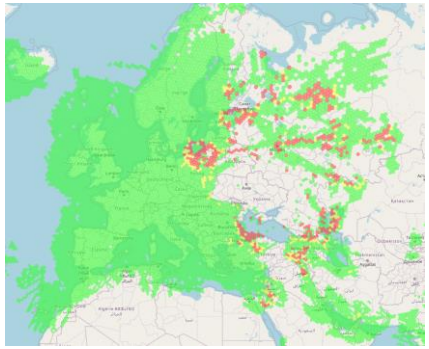
- Impact to safety and regularity of flights, maritime activity and time synchronization of telecommunications networks beyond the zone of conflict

Interference Evolution :

- Harmful interference increased significantly from 2019 to 2023
- It affected receivers onboard aircrafts and caused degradation or total loss of the service for passenger, cargo and humanitarian flights.
- ADS-B based system detected 127610 flights affected globally between 17.10.2022 to 19.06.2023 (8 months)
- Number of Reports received by ITU in **2024** are **5.25 times** than the same period in **2023**
- Main affected regions reported to ITU:
  - Middle East
  - Nort-East Europe (Baltic Sea)
  - Black Sea Region
  - Korean Peninsula
  - Central Africa



23 March 2022



23 March 2025

- 22 Administrations concerned and 4 Affected Satellite Systems: GPS, Galileo, Glonnass, Compass
- **Recently Resolved Cases : 1 case in Baltic Sea – August 2024**
  1 case in Middle East - September 2024

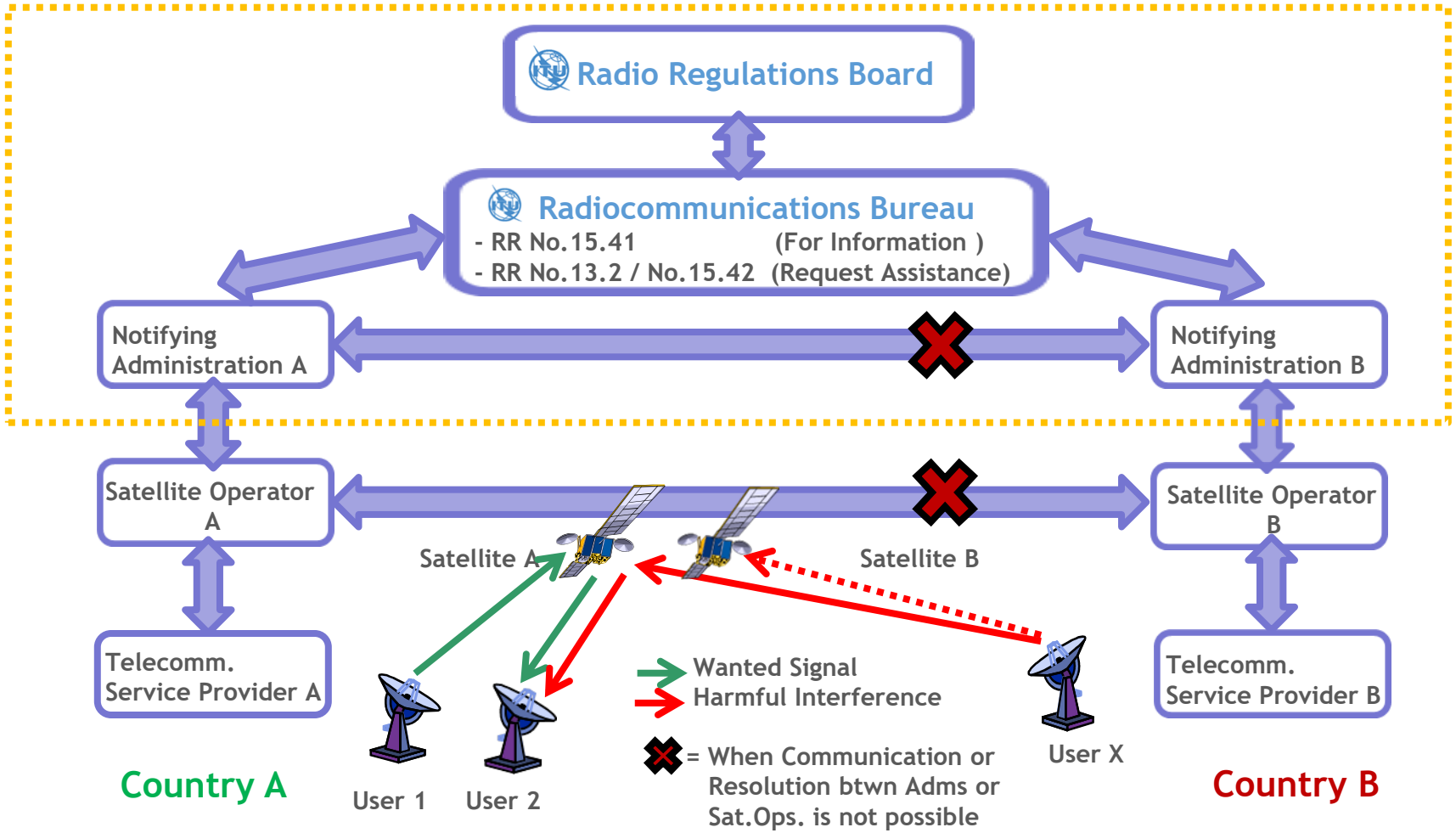
Sources: ITU Member States, UNWFP, Eurocontrol, IATA, ICAO, gpsjam.org

Process in case of Harmful Interference

Compulsory Arbitration
(ITU Optional Protocol)
Procedure in Art.41 CV

World
Radiocommunications
Conference
(e.g. Resolution 676 (WRC-23))

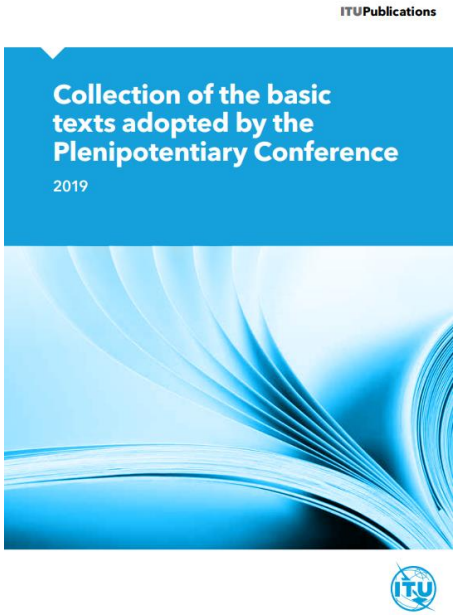
Settlement of Disputes : ITU CS 56
Negotiation, Diplomatic Channels
Bi / Multi Lateral Treaties



Key Regulatory Provisions
ITU Constitution

- ITU CS Art. 45: All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Member States or of recognized operating agencies, or of other duly authorized operating agencies which carry on a radio service, and which operate in accordance with the provisions of the Radio Regulations.

- ITU CS Art. 47: Member States agree to take the steps required to prevent the transmission or circulation of false or deceptive distress, urgency, safety or identification signals, and to collaborate in locating and identifying stations under their jurisdiction transmitting such signals.



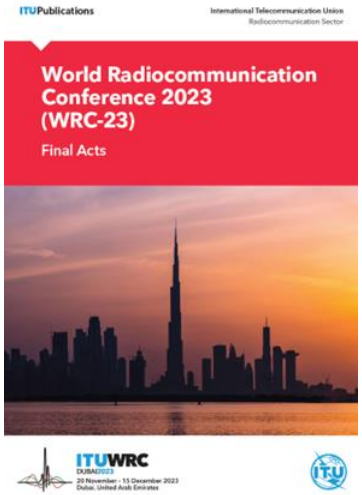
Key Regulatory Provisions
ITU Radio Regulations

- ITU RR No. 15.1: All stations are forbidden to carry out unnecessary transmissions, or the transmission of superfluous signals, or the transmission of false or misleading signals, or the transmission of signals without identification

- ITU RR No.15.28: Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article 31 and Appendix 27) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference

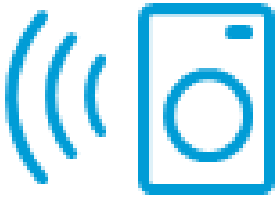
WRC-23 Outcome: (1/3)

Adopted by consensus the Resolution 676 on Prevention and mitigation of harmful interference to the radionavigation satellite service in the 1 164-1 215 MHz and 1 559-1 610 MHz frequency bands and Resolved to



Urge Administrations:

1. **To apply necessary measures to avoid the proliferation, circulation and operation of unauthorized transmitters that cause, or have the potential to cause, harmful interference to RNSS**



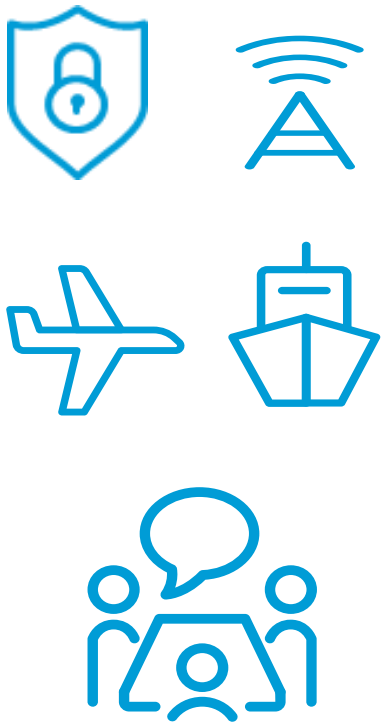
WRC-23 Outcome: (2/3)

Urge Administrations:

2. To take the following actions to prevent and mitigate harmful interference affecting RNSS without prejudice to the right of administrations to deny access to the RNSS, for security or defence purposes:

2.1 To encourage **collaboration** between **spectrum regulators, enforcement authorities and RNSS stakeholders**, in particular in the **aeronautical and maritime** domains;

2.2 To encourage **cooperation** between **aeronautical, maritime and security authorities**, as well as **spectrum regulators**, as appropriate, **to address interference risks** to RNSS systems that may stem from the **activities of these security authorities;**



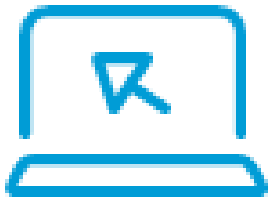
WRC-23 Outcome: (3/3)

Urge Administrations:

3. To **report** to the Bureau cases of harmful interference affecting RNSS, in accordance with Article 15.

How to submit it ? :

by using ITU-BR SIRRS Online application →
https://www.itu.int/en/ITU-R/space/SIRRS/Pages/default.aspx



4. Bureau to provide **assistance** to Administrations under No 13.2 of Radio Regulations

Recent ITU-BR Actions:

- **On 8 July 2022, ITU BR issued the Circular Letter CR/488 raising awareness of the issue, recalling Member States of their obligation to abide the Constitution and Radio Regulations, and provided the following recommendations to prevent and mitigate the interference.**

- **Radiocommunications Bureau reported the issue through Part 2 of Director's Report to WRC-23 with a recommendation that the Conference address the matter and adopt a Resolution with measures to prevent and mitigate harmful interference affecting RNSS. WRC-23 adopted RES 676**

- **Following several cases reported by BR with recommendations to the Radio Regulations Board (RRB) during 2024, the RRB decided at its 99th Meeting on 17-22 March 2025:**

  - To urge Administrations to abide to ITU CS and RR (International Treaties)
  - To urge Administrations to Cooperate Urgently in the resolution of cases
  - To instruct the Bureau to make publicly available a summary of cases in a dedicated webpage, inline with *resolves 2* PP Resolution 119 (Bucharest 2022)
  - Bureau to convene bilateral/multilateral meetings with Administrations concerned

ITU-ICAO-IMO Actions:

3 UN Agencies joined efforts and signed a Joint Statement on 17 March 2025 to protect the RNSS from transmissions that can adversely impact on the availability and reliability of this critical radiocommunication service impacting the aviation, maritime and telecommunications sectors.

*ITU, ICAO, and IMO Secretary Generals jointly and **urgently call** on their respective **Member States** to:*

- *protect the RNSS from transmissions that can adversely cause harmful interference degrading, interrupting or misleading signals used for civilian and humanitarian purposes;*
- *reinforce resilience of the systems which rely on RNSS for navigation, positioning and timing in relation to this type of interference;*
- *retain sufficient conventional navigation infrastructure for contingency support in case of RNSS outages and misleading signals, and develop mitigation techniques for loss of services;*
- *increase collaboration between radio regulatory, civil aviation, maritime, defence and enforcement authorities; and*
- *report cases of harmful interference affecting RNSS to the appropriate telecommunication, aeronautical and maritime authorities, and to the ITU Radiocommunications Bureau, to enable the monitoring of the situation.*

Thank You

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