

Dealing with satellite interference – building resilient infrastructures

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Thomas WELTER

1. Missions entrusted to ANFR

- ANFR is in charge of planning, managing and controlling the use of radiofrequencies, which belong to the State Public Domain (Art L.43).
- ANFR prepares and coordinates the French representation in international negotiations related to the use of radiofrequencies.
- Regarding satellite systems:
 - It instructs on behalf of the French Government applications for authorization (Art. L. 43 – I)
 - It receives requests for assignments relating to satellite systems and declares them to the ITU, unless they do not conform to the NFTA or the instruments of the ITU (Art. L.97-2.-I.-1)
 - It collects the fees corresponding to the costs of processing of the filing declared to the ITU (Art. L.97-2.-I.-2)
 - It can search and find the corresponding offences (Art. L. 97-3. -2)

2. ITU Constitution

Article 45, harmful interference

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.

3. Radio Regulations

Article 15, harmful interference

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 (except as provided for in Article 19).

15.25 Administrations shall cooperate in the detection and elimination of harmful interference, employing where appropriate the facilities described in Article 16 and the procedures detailed in this Section.

15.35 On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by the quickest means available. Such acknowledgement shall not constitute an acceptance of responsibility. (WRC-2000)

4. Radio Regulations (continued)

Reporting harmful interference

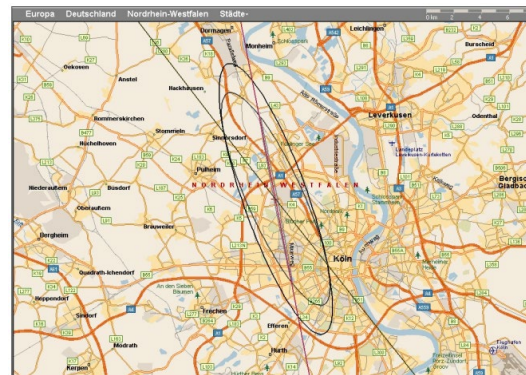
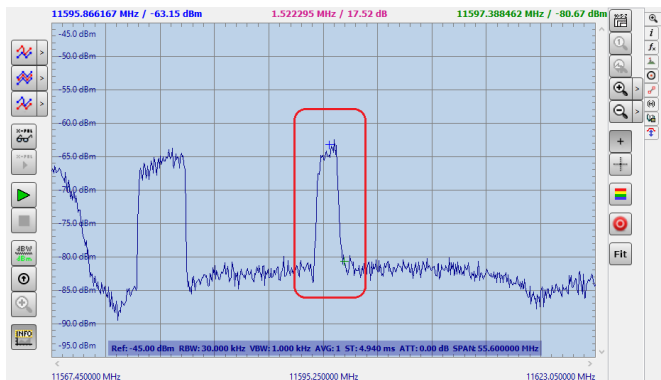
- Appendix 10 of the Radio Regulations
- Report ITU-R SM.2181, Use of Appendix 10 of the Radio Regulations to convey information related to emissions from both GSO and non-GSO space stations including geolocation information.
- Satellite Interference Reporting and Resolution System (SIRRS) developed by the Radiocommunication Bureau in response to Resolution **186** of ITU Plenipotentiary Conference 2014.

5. Harmful interference cases FSS, BSS

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.

Our Interference report includes **scan plots** and **geolocation information**.



6. Intentional interference

In some cases, the interference can be characterized as intentional:

- High power unmodulated carrier;
- Targeting specific broadcast emissions;
- Content replacement;
- ...

Satellite interference

7. Replacement of content



6. Harmful interference cases, EESS

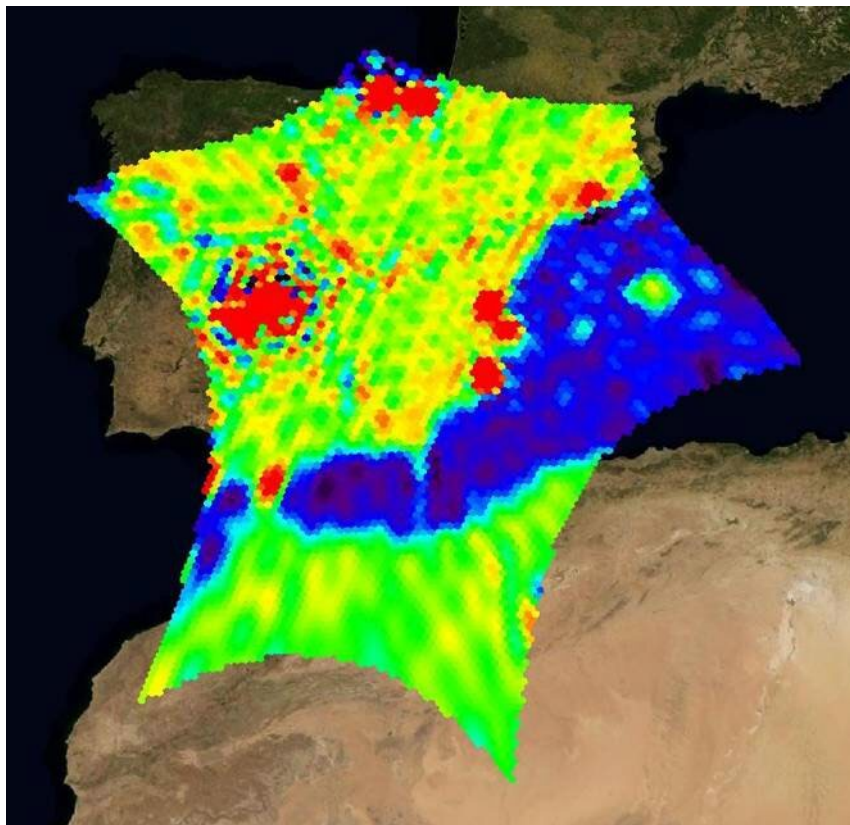
Earth Exploration Satellite Service (passive) in 1400-1427 MHz band

Causes :

- 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.

Satellite interference

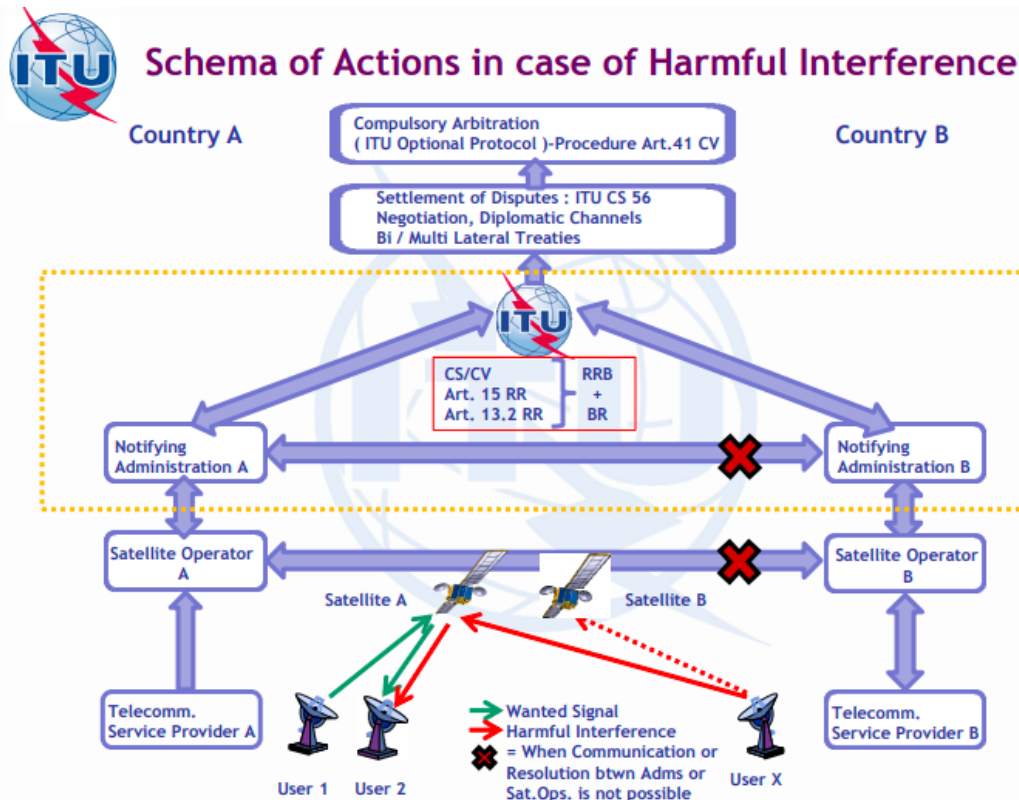
7. EESS interference, geolocation plot



8. International Monitoring System

- Resolution ITU-R 23-3, Extension of the International Monitoring System to a worldwide scale.
- Article 16 of the Radio Regulations (RR) contains the provisions related to the International Monitoring System (IMS). The IMS comprises monitoring stations and centralizing offices voluntarily designated by administrations.

9. Scheme of actions



1. Bilateral discussions with the administration responsible for the interfering station;
2. Requesting the assistance of the BR;
3. Requesting an RRB decision;
4. Settlement of disputes (CS56) through negotiation, diplomatic channels, bilateral treaties;
5. Compulsory arbitration (CV41)

Agence nationale des fréquences

T. +33 (0)1 45 18 72 72 78, avenue du Général de Gaulle
F. +33 (0)1 45 18 73 00 94707 MAISONS-ALFORT CEDEX

www.anfr.fr

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