CONFLICTS RELATED TO RADIO FREQUENCY INTERFERENCE
ABUSE OF ITU REGULATORY PROCEDURES

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ITU Mission and Mandate
Leading UN agency for ICT

A key role in global management of the orbit - spectrum resources

Supporting developing countries in implementation of ICT projects and capacity building activities.

Development of international standards defining elements in the interoperability of global ICT infrastructure.

Committed to connecting the World

www.itu.int
First Radio-Telegraph conference in Berlin

RR-1906
32 pages...

...today more than 1000 pages (4 Volumes)

WRC-15 decisions in new RR-2017
1963

First Extra-ordinary Administrative Radio Conference to allocate frequency bands for Space radiocommunication purposes
Infringement of the ITU CS, CV or RR

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 …which carry on a radio service, and which operate in accordance with the provisions of the Radio Regulations

(Article 45, CS 197)
Infringement of the ITU CS, CV or RR

- **Not necessarily** harmful interference (HI)

- **No. 1.169 Harmful Interference:** “Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with RR” (Article 45 and CS 1003)

- **Permissible Interference (No. 1.167)** (Criteria contained in RR or in ITU-R REC)

- **Accepted Interference (No. 1.168)** (Agreed between ADM)

- **No Distinction** between Intentional (jamming) and Unintentional Interference
No. 15.1 § 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.

No. 15.21 § 13 If an administration has information of an infringement....committed by a station under its jurisdiction, the administration shall ascertain the facts, and take the necessary actions.
RR Mechanisms to control HI

Control of Interference

**ALLOCATION**
Frequency separation of stations of different services

**REGULATORY PROTECTION**
e.g. No. 22.2: Non-GSO to protect GSO (FSS and BSS)

**POWER LIMITS**
PFD to protect TERR services
EIRP to protect SPACE services
EPFD to protect GSO from N-GSO
(EPFD = aggregate equivalent power flux-density)

**COORDINATION**
between Administrations to ensure interference-free operations conditions
Measures against HI

1. No. 4.4 - ADM shall not assign to a station any frequency in derogation of either the ART 5 or the other RR provisions, except on the express condition that such a station shall not cause HI to, and shall not claim protection from HI caused by, a station operating in accordance with the provisions of the RR

2. PRIMARY and secondary services (Nos. 5.23 – 5.31)

3. Protection of frequency assignments recorded in the MIFR with favourable findings
ITU-R General Measures against HI

From early stages of planning to final operational phase

1. Preventive

- ITU-R Study Group activities
  - **ITU-R** Recommendations
  - Compatibility Studies
- WRC decisions
- **RR ART 9 and 11** procedures - recording in the MIFR

2. Corrective

- **RR ART 15 and APP 10** To report a case of HI to the Bureau

- Radio Regulations Board decisions
1. **MoU** - International Monitoring System

2. **Promoting** the exchange of experience
   ITU HQ on 13-14 June 2016

3. **Providing** Assistance to ITU Members

4. **International Registry of Interference to Space Services (IRISS)**
REGULATORY LIFE SPAN OF A SATELLITE NETWORK

- Notification Article 11
- Resolution 49 (due diligence)
- Bringing in into use (DBIU)
- 7-year limit under No. 11.44

CONTINUOUS USE

- Period of validity (Resolution 4)
- Suspension (No. 11.49)
- No. 13.6 (Maintenance of the Master Register by the Bureau)
Removal of API as of 1.1.2017 – RES 31 (WRC-15)
Transitional measures for the elimination of Advance Publication Information for frequency assignments to satellite networks subject to Coordination (ART 9) - see ITU CR/401
http://www.itu.int/md/R00-CR-CIR/en

RES 40 (WRC-15) Use of *one space station* to bring frequency assignments to geostationary satellite networks *at different orbital locations* into use within a short period of time – see ITU CR/396
http://www.itu.int/md/R00-CR-CIR/en

MOD 11.44/11.44B (Bringing into use of assignment to a space station)
MOD 11.49 (Suspension of assignment to a space station)
MOD 13.6 (Maintenance of the Master Register by the Bureau)
RESOLUTION 763 (WRC-15)
Stations on board sub-orbital vehicles

- The spectrum requirements for TT&C and voice communications on stations on board sub-orbital vehicles have not been studied.
- Provisions of No. 4.10 (safety aspect) may apply for certain aspects of these operations.

- resolvesto conduct studies to identify any required technical and operational measures, in relation to stations on board sub-orbital vehicles, that could assist in avoiding harmful interference between radiocommunication services.
DBIU - TIME FRAME - WRC-15

- 7 years
- 90 days
- 90 days + 30 days = 120 days
- > 120 days

- API (not subject of C) or CR/C
- NOTIFICATION Provisional DBIU
- DBIU
- CONFIRMATION OF THE DBIU
- Deadline for confirmation (No. 11.44B, 11.44B1)
- Deadline under 11.44B2
- Deadline for bringing into use (No. 11.44)
SUSPENSION OF USE – WRC-15

**SUSPENSION**

- Under No. **11.49**
- For a period exceeding 6 months
- Inform the BR **no later than 6 months from the beginning of the suspension**
- Publish on the ITU-R web
- Publication in BR IFIC PART II-S

**RESUMPTION**

- Under No. **11.49**
- **Not later than 3 years from suspension**
- Confirmation of the date of bringing back into use within 30 days following the 90-day period (No. **11.49.1**)
- Publish on the ITU-R web
- Publication in BR IFIC PART II-S
INFORMATION ON THE ITU-R WEB

BRINGING INTO USE

• Status of the bringing into use
• Planned and non-planned bands
  • http://www.itu.int/net/ITU-R/space/snl/listinuse/index.asp

SUSPENSION

• List of suspended networks
• History with dates of resumption
• Planned and non-planned
  • http://www.itu.int/net/ITU-R/space/snl/list1149/index.asp

Information provided by ADM
Official publications on the ITU-R web and BRIFIC
CS Article 48
Installations of National Defence Services in Space

- So far 15 ADM (AUS, B, CHN, D, F, I, IND, J, LUX, MEX, RUS, THA, TUR, UAE, USA) have requested application of CS ART 48 by stating that the use of their satellite networks was for the purpose of national defense, military or governmental use.
- This comprises 120 satellite networks across 62 unique orbital positions.
CS Article 48
Installations of National Defence Services in Space

- Member States retain their *entire freedom* with regard to military radio installations (Art 48 CS 203)

- These installations *must*, so far as possible, observe
  - *statutory provisions* relative to giving assistance in case of distress and to the measures to be taken to *prevent HI*
  - the provisions of the Regulations (*types of emission and the frequencies to be used, according to the nature of the service*) performed by such installations (Art 48 CS 203)
CS Article 48
Installations of National Defence Services in \textit{Space}

WRC-15 and RRB-16-1 decisions

- **WRC-15** noted that CS ART 48 refers to "\textit{military radio installations}" and not to "\textit{governmental purposes in general}" and decided that the Bureau should not infer that an ADM refers to CS ART 48 in its answer to an inquiry under No. 13.6, unless this ADM has explicitly invoked CS ART 48

- **WRC-15** also \textit{decided} that there should be \textit{no restriction in terms of class of station and nature of service} for a station eligible to operate under ART 48

- **RRB16-1** decision: The Board recognized the difficulties of the Bureau in applying No. 13.6 in relation to spectrum use for governmental purposes in general and confirmed \textbf{WRC-15} decisions: ADM have to \textit{explicitly invoke CS ART 48, if it applies}. \textbf{In all other cases No. 13.6 should continue to be applied}
Space statistics

- ITU BR *Annual Space Report* to the Scientific and Technical Subcommittee (STS) of the COPUOS on the use of the geostationary-satellite orbit (GSO) and other orbits

http://www.itu.int/ITU-R/go/space/snl/en

- Total count – 90 ADM in the *space MIFR*
- Count of all *satellite filings* submitted to the Bureau and *Notified (recorded)* in the *space MIFR*

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<th>All Non-GSO/N</th>
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<td>3133/1052</td>
<td>495/320</td>
<td>3628/1372</td>
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Free online access to ITU-R information

- **WRC-15 Info and Final Acts**
  

- **ITU-Radio Regulations @ 2012**
  
  http://www.itu.int/pub/R-REG-RR-2012

- **ITU-R Recommendations**
  
  http://www.itu.int/publ/R-REC/en