

## Member States of the Inter-American Telecommunication Commission (CITEL)

### PROPOSALS FOR THE WORK OF THE CONFERENCE

#### Agenda item 7(XX)

**Agenda item 7:** *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev. WRC-07) to facilitate rational efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit*

7(XX) Issue XX – Coordination distance between space research earth stations and mobile (aircraft) stations in the 2 200-2 290 MHz band

**Background Information:** Resolution 86 (Rev. Marrakesh, 2002) requested that WRC-03 and subsequent conferences review the regulatory procedures associated with the advance publication, coordination, notification and recording of frequency assignments pertaining to satellite network. WRC-03 identified in Resolution **86 (WRC-03)** the scope and the criteria to be used for the implementation of Resolution 86 (Rev. Marrakesh, 2002). This Resolution, which was revised at WRC-07, states in *resolves* 1 that future conferences should “[to] consider any proposals which deal with deficiencies and improvements in the advance publication, coordination and notification procedures of the Radio Regulations for frequency assignments pertaining to space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Radiocommunication Bureau, as appropriate”.

At WRC-07, a new row was added to Table 10 (Annex 7) in Appendix 7 of RR that specifies a 500 km predetermined coordination distance between mobile (aircraft) stations and ground-based stations in the bands in which the frequency sharing situation is not covered in the other rows. Since the current Table 10 does not include a row that specifies the required coordination distance between space research earth stations and mobile (aircraft) stations in the 2 200-

2 290 MHz band, the administrations are likely to use 500 km as the coordination distance between these stations.

Previously, in the 2 200-2 290 MHz band, administrations had agreed to use 1 050 km as the predetermined coordination distance between space research earth stations and mobile (aircraft) stations based on the distances specified in Table III, Appendix **S7** of RR (1998), which gave the maximum coordination distance for propagation mode (1), determined by requiring that interference from all sources (line-of-sight and non-line-of-sight) would not exceed the protection criterion of the space research earth stations. Thus, this 1 050-km coordination distance was used for protecting the space research service earth stations from transmissions of aircrafts flying over the ocean surface, where signals would propagate through ducting mechanism and would potentially create interference at the space research stations.

In the current study period, Working Party 7B, in consultation with Working Party 5B, revised Report ITU-R SA.2276 (approved by Study Group 7), which shows the required separation distances between mobile (aircraft) stations and several SRS earth stations as a function of aircraft altitudes. The results show that 500 km is not sufficient to protect the SRS earth stations and that actually 880 km would be needed to protect them. Based on these results, Study Group 7 at its May 2015 meeting agreed a draft new Recommendation ITU-R SA.[SRS-Aircraft 2GHz] recommending that 880 km be used as the coordination distance between SRS earth stations and mobile (aircraft) stations. Under Resolution **74 (Rev.WRC-03)** which outlines the process to keep the technical bases of Appendix 7 current, Study Group 7 has already brought these developments to the attention of the Director of the Radiocommunication Bureau and the Radiocommunication Assembly. Therefore, a new row to the Table 10 (Annex 7) in Appendix 7 of RR should be added to state that the required predetermined coordination distance between mobile (aircraft) stations and SRS earth stations should be 880 km in the 2 200-2 290 MHz band.

APPENDIX 7 (REV.WRC-12)

**Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz**

ANNEX 7

**System parameters and predetermined coordination distances for determination of the coordination area around an earth station**

**3 Horizon antenna gain for a receiving earth station with respect to a transmitting earth station**

**MOD USA/7XX/1**

TABLE 10 (WRC-07)

**Predetermined coordination distances**

Frequency sharing situation		Coordination distance (in sharing situations involving services allocated with equal rights) (km)
Type of earth station	Type of terrestrial station	
Ground-based in the bands below 1 GHz to which No. <b>9.11A</b> applies. Ground-based mobile in the bands within the range 1-3 GHz to which No. <b>9.11A</b> applies	Mobile (aircraft)	500
Aircraft (mobile) (all bands)	Ground-based	500
Aircraft (mobile) (all bands)	Mobile (aircraft)	1 000
Ground-based in the bands: 400.15-401 MHz 1 668.4-1 675 MHz	Station in the meteorological aids service (radiosonde)	580
Aircraft (mobile) in the bands: 400.15-401 MHz 1 668.4-1 675 MHz	Station in the meteorological aids service (radiosonde)	1 080
Ground-based in the radiodetermination-satellite service (RDSS) in the bands: 1 610-1 626.5 MHz 2 483.5-2 500 MHz 2 500-2 516.5 MHz	Ground-based	100
Airborne earth station in the radiodetermination-satellite service (RDSS) in the bands: 1 610-1 626.5 MHz	Ground-based	400

2 483.5-2 500 MHz 2 500-2 516.5 MHz		
Receiving earth stations in the meteorological-satellite service	Station in the meteorological aids service	The coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius (see Note 1)
Non-GSO MSS feeder-link earth stations (all bands)	Mobile (aircraft)	500
<u>Receiving earth stations in the space research service in the band: 2 200-2 290 MHz</u>	<u>Mobile (aircraft)</u>	<u>880</u>
Ground-based in the bands in which the frequency sharing situation is not covered in the rows above	Mobile (aircraft)	500

NOTE 1 – The coordination distance,  $d$  (km), for fixed earth stations in the meteorological-satellite service vis-à-vis stations in the meteorological aids service assumes a radiosonde altitude of 20 km and is determined as a function of the physical horizon elevation angle  $\varepsilon_h$  (degrees) for each azimuth, as follows:

$$\begin{aligned}
 d &= 100 && \text{for } \varepsilon_h \geq 11^\circ \\
 d &= 582 \left( \sqrt{1 + (0.254 \varepsilon_h)^2} - 0.254 \varepsilon_h \right) && \text{for } 0^\circ < \varepsilon_h < 11^\circ \\
 d &= 582 && \text{for } \varepsilon_h \leq 0^\circ
 \end{aligned}$$

The minimum and maximum coordination distances are 100 km and 582 km, and correspond to physical horizon angles greater than  $11^\circ$  and less than  $0^\circ$ . (WRC-2000)

**Reasons:** This modification is needed to specifically cover the case of receiving earth stations in the space research service and aircraft terrestrial stations.