

QUESTION ITU-R 146-2/7¹

Criteria for evaluation of interference to radio astronomy

(1990-1993-2000)

The ITU Radiocommunication Assembly,

considering

- a) that under the Radio Regulations (RR), frequency bands have been allocated to radio astronomy for both line and continuum observations;
- b) that harmful interference to radio astronomy observations may be caused by unwanted signals of very low power;
- c) that other services operate in many of the bands in which radio astronomy has allocations, or use high-power transmitters in bands adjacent to, or harmonically related to, those used for radio astronomy;
- d) that the increasing number of transmissions from spacecraft may introduce problems of interference to radio astronomy and that these cannot be avoided by choice of site for an observatory or by local protection;
- e) that the use of orbiting antennas in radio astronomy, both as array elements and as independent radio telescopes, offers advantages over terrestrial antennas for certain observations;
- f) that in Recommendation 61*, the WARC-79 requests information relating to criteria for harmful interference to radio astronomy;
- g) that in Resolution 63, the WARC-79 invited the ITU-R to continue studies, relating to industrial, scientific and medical (ISM) equipment, to ensure adequate protection of radiocommunication services,

decides that the following Question should be studied

- 1** What is the practical interpretation for the radio astronomy service, of harmful interference as defined in RR No. 1.169?
- 2** What are the threshold levels of unwanted signals which, if exceeded for more than specified percentages of time, will cause harmful interference, and what is the dependence of these thresholds on the nature and methods of the radioastronomical observations?
- 3** What are the levels of interference which may occur at typical observatory sites**, due to various sources of interference, including:
 - 3.1** transmissions of other services operating in the bands used for radio astronomy observations;

¹ In the year 2009, Radiocommunication Study Group 7 extended the completion date of studies for this Question.

* This Recommendation was suppressed by WRC-2000.

** Propagation data for this study will be required from Radiocommunication Study Group 3.

3.2 harmonics, intermodulation products, and sidebands from transmitters in other frequency bands;

3.3 other sources of electrical interference including ISM equipment?

4 What is the influence of reflections from aircraft and Earth satellites in increasing the risk of interference?

5 What is the response of typical radio astronomy receivers to signals in frequency bands adjacent to the nominal receiver acceptance band?

6 What special precautions may be necessary, on the part of radioastronomers and the operators of the other services, when a transmitter which is a potential source of interference is on a spacecraft or aircraft within the field of view of a radioastronomical observatory?

7 What are the conditions required to avoid harmful interference to observations involving radio astronomy antennas?

further decides

1 that the results of the above studies should be included in (a) Recommendation(s);

2 that the above studies should be completed by 2011.