

QUESTION ITU-R 244/4*

Sharing between feeder links of the mobile-satellite (non-geostationary) service in the band 5 091-5 250 MHz and the aeronautical radionavigation service in the band 5 000-5 250 MHz

(1996)

The ITU Radiocommunication Assembly,

considering

- a) that the World Radiocommunication Conference (Geneva, 1995) (WRC-95) adopted Resolution 114 which, *inter alia*, instructs the ITU-R to study the technical and operational issues relating to the sharing of the band 5 091-5 150 MHz between the aeronautical radionavigation service and the fixed-satellite service providing feeder links of the non-geostationary orbit (non-GSO) satellite mobile-satellite service (MSS) (Earth-to-space) and report the results to the WRC-03;
- b) Recommendation 607 of the World Administrative Radio Conference on Mobile Services (Geneva, 1987);
- c) that the band 5 000-5 250 MHz can be used on a worldwide basis for nationally and internationally agreed aeronautical radionavigation systems; that Article 4.10 of the Radio Regulations (RR) provides recognition that special measures may be required for the protection of radionavigation and safety services (RR Article 1.59);
- d) that the band 5 000-5 091 MHz can be used for the international standard Microwave Landing System (MLS) and other aeronautical radionavigation applications which are used or planned to be used by aircraft for precision approach and landing purposes. The band 5 091-5 150 MHz can be used by these aeronautical radionavigation applications if required;
- e) that the band 5 091-5 250 MHz is also allocated to the non-GSO MSS feeder link in the Earth-to-space direction;
- f) that the band 5 150-5 250 MHz is also used for other national aeronautical radionavigation systems;
- g) that the use of non-GSO MSS feeder-link earth stations in the band 5 091-5 250 MHz may create further constraints to the operation of aeronautical radionavigation systems in this band;
- h) that interference problems have occurred in the past between radiocommunication services having relatively high powers and the aeronautical radionavigation systems which operate with receivers having high sensitivity;
- j) that practical measurement has not been fully investigated to assess the interference potential to these aeronautical systems;
- k) that if high-powered earth stations of the feeder links of the non-GSO MSS were to be operated in close geographic proximity to aeronautical receivers then the signals from these earth stations would be a potential source of interference to these receivers;

* This Question should be brought to the attention of the International Civil Aviation Organization (ICAO).

- l) that the spaceborne receivers of non-GSO MSS feeder links may encounter problems of interference from ground-based transmitters in the aeronautical radionavigation service;
- m) that it would be desirable to study methods of achieving compatibility between the aeronautical radionavigation systems and feeder links of the non-GSO MSS,

decides that the following Question should be studied

1 What are the different interference mechanisms arising from the operation of feeder links of the non-GSO MSS in the band 5 091-5 250 MHz and the different aeronautical radionavigation systems in the band 5 000-5 250 MHz?

2 What is the susceptibility of existing and currently specified aircraft receivers to the following types of interference arising from the operation of high-powered non-GSO MSS feeder-link earth stations at various power levels, frequency separations from the aeronautical frequency and relative distances between the MSS earth stations and aircraft stations:

- desensitization (front-end overloading) of the receiver;
- intermodulation generated in the receiver;
- spurious emissions from MSS feeder-link earth stations and radiation produced by non-linear interaction between different channels within the earth stations?

3 What are the variations in the susceptibilities of existing airborne receivers to such interference and, in particular, in what measure is this variation due to differences in avionic equipment installation practices, e.g. antenna feeder cable lengths, antenna position on airframe and type of antenna?

4 What is the degradation in system performance which may arise as a result of interference from services using this band?

5 What are the susceptibilities of the non-GSO feeder-link satellite receivers to emissions of the aeronautical radionavigation service, taking into account frequency separations and orbital characteristics including:

- desensitization (front-end overloading) of the receiver;
- intermodulation generated in the receiver;
- spurious emissions from MSS feeder-link earth stations and radiation produced by non-linear interaction between different channels within the earth stations?

6 What are the protection criteria applicable to the two services involved?

7 What technical methods, including mitigation techniques, can be used to achieve compatibility between feeder links of the non-GSO MSS and the aeronautical radionavigation systems?

further decides

- 1** that the above mentioned studies should be completed by 2005.

NOTE 1 – See Recommendation ITU-R S.1342.