

## RECOMMENDATION ITU-R S.1069

COMPATIBILITY BETWEEN THE FIXED-SATELLITE SERVICE AND  
THE SPACE SCIENCE SERVICES IN THE BAND 13.75-14 GHz

(Question ITU-R 80/4)

(1994)

The ITU Radiocommunication Assembly,

*considering*

- a) that the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992) (WARC-92) allocated the frequency band 13.75-14 GHz to the fixed-satellite service (FSS) on a primary basis;
- b) that this band is also allocated to the space research service on a secondary basis and may also be employed by the Earth exploration-satellite and space research services on a secondary basis for radiolocation stations installed on spacecraft;
- c) that No. 855A of the Radio Regulations (RR) places restrictions on the fixed-satellite, radiolocation and radionavigation services in order to allow these services to share this band;
- d) that RR No. 855B provides for geostationary space stations in the space research service, for which information for advance publication has been received by the ex-IFRB prior to 31 January 1992, to operate on an equal basis with stations in the FSS;
- e) that non-geostationary-satellite orbit (GSO) space stations in the space research and Earth exploration-satellite services are to be protected until 1 January 2000 in accordance with RR No. 855B;
- f) that until 1 January 2000 it is necessary for FSS users, in order to be compatible with the space science services, to take certain steps to provide protection to them;
- g) that the permissible levels of interference for the current space services are specified in Annex 2 of Recommendation ITU-R SA.1071. These should be applied until 1 January 2000 when considering specific sharing situations;
- h) that Recommendation ITU-R SA.1071 states that there is a need to extend, beyond 1 January 2000, protection to the links from a data relay satellite in the band 13.772-13.778 GHz in support of space research and Earth exploration-satellite missions;
- j) that, whilst non-GSO science service space stations intended for use beyond 1 January 2000 should be designed for operation outside of the band 13.75-14 GHz, unforeseen circumstances may create the need for individual stations to operate within this band after that date, on a secondary basis and without the regulatory protection from FSS emissions afforded before that date;
- k) that maximum pfd levels likely to be produced at the GSO by space stations in the space science services are those given in Annex 1;
- l) that it would be desirable for future data relay satellite networks operating in the space science services to be designed to operate at frequencies outside the 13.75-14 GHz band;
- m) that the interference environment for space science services continuing to operate in the band after the protection period is likely to be fairly severe,

*recommends*

- 1. that to protect spaceborne altimeters from unacceptable interference until 1 January 2000, the following consultative steps should be taken:

**1.1** upon publication of the RR Appendix 4 information of an FSS network intending to use the 13.75-14 GHz band, the administration with a spaceborne altimeter in the band should inform the notifying administration of the geographic constraints, if any, which may affect the location of earth stations in the FSS network;

1.2 the FSS network operator should review the information above and advise the operator of the spaceborne system about the location(s) of proposed earth stations in the network, that would not meet the geographic constraints;

1.3 the consultation should then focus on these earth stations in order to ensure the protection required by the spaceborne altimeter;

2. that to protect spaceborne scatterometers using fan beams from unacceptable interference until 1 January 2000, FSS earth stations should not exceed an e.i.r.p. density toward the scatterometer orbit over the oceans of 25 dBW in any 2 kHz band between 13.99356 GHz and 13.99644 GHz. To meet this condition it may be advisable to avoid operation between these frequencies. Exceptionally, on a case-by-case basis the avoidance of unacceptable interference may be accomplished through consultation;

3. that to protect spaceborne precipitation radars from unacceptable interference:

3.1 until 1 January 2001:

3.1.1 the e.i.r.p. density of any FSS earth station at a latitude between  $\pm 55^\circ$  should not exceed 61 dBW in any 600 kHz band between 13.793 GHz and 13.805 GHz;

3.1.2 the elevation angle of any FSS earth station using the band 13.75-14 GHz should not exceed  $71^\circ$ ;

3.2 until 1 January 2000, implementation of individual FSS earth stations planned to use the band 13.75-13.86 GHz at latitudes between  $\pm 40^\circ$  will require consultation on a case-by-case basis, in order to ensure that the appropriate protection is given (see Note 1);

3.3 the consultation process in § 3.2 should be extended until 1 January 2001, with a view to ensuring that whenever practicable the appropriate protection is given (see Note 1);

*Note 1* – The consultation process in § 1 is also applicable to the consultations carried out under § 3.2 and § 3.3 to protect spaceborne precipitation radars from unacceptable interference. An administration planning an FSS network should provide detailed information regarding the emissions in the band 13.793-13.805 GHz with its RR Appendix 4 submission.

4. that to protect the links from data relay satellites (DRS) to low-Earth orbiting satellites operating in the space science service until such time, that all data relay satellites in the GSO, for which information concerning advance publication was received by the ex-IFRB prior to 31 January 1992, cease to operate within the band 13.772-13.778 GHz, the e.i.r.p. density of transmissions from any fixed-satellite earth station within this band should not exceed 71 dBW per 6 MHz;

5. that administrations who continue to operate data relay satellite networks in the space science services after 1 January 2000 are urged to vacate those systems from the band 13.75-14 GHz as soon as practicable;

6. that after the periods indicated in the foregoing *recommends*:

6.1 the FSS will no longer be obligated to protect non-geostationary space stations in the space research and Earth exploration-satellite services in accordance with the criteria indicated in § g) above;

6.2 the guidelines in Annex 2 could be used by the operators of any space science service stations which remain in operation in the band 13.75-14 GHz.