



COVERING NOTE

GENERAL SECRETARIAT INTERNATIONAL TELECOMMUNICATION UNION

THE ITU RADIOCOMMUNICATION SECTOR

Geneva, 23 October 2002

**Subject: CORRIGENDUM TO
ITU-R Handbook – Mobile-satellite service (MSS)**

Replace pages 22 and 30 of the Handbook on Mobile-satellite service (MSS) by the attached pages 22 and 30.

Thus, while orbital separations needed to manage inter-system interference on the order of 3° are possible in the lower FSS bands, such as 4/6 GHz, and even down to 2° in the 11/12 GHz FSS bands, similar interference objectives in an MSS band such as 1.5/1.6 GHz typically require orbital separations of around 40° or more! Often times, this factor alone require MSS networks to resort to frequency band segmentation techniques rather than the use of co-channel frequency sharing.

However, the use of narrow-coverage spot beams on the newer generation of MSS systems can allow for a degree of frequency re-use when there is sufficient isolation between the beams of two adjacent (GSO) networks operating in the same portion of an MSS band. MSS networks not operating co-coverage are also, under the right conditions, able to re-use the same frequencies.

In summary, MSS networks can share frequencies; i.e., transmit and receive on the same or overlapping radio frequency channels, only if the mutual interference can be kept below a specified level to achieve the interference objective on both the uplink and downlink.

There are only a limited number of mechanisms whereby one MSS satellite network can discriminate against, or isolate itself from, interfering signals from another MSS satellite network sufficiently in order to meet its interference objective:

- using the angular *directivity* of the receiving and/or transmitting *space station* antennas;
- using the angular *directivity* of the transmitting and/or receiving *earth station* antennas;
- using *opposite polarizations* on the wanted and interfering channels;
- *interleaving* or off-setting channels (in frequency) in order to avoid full co-channel operation.

The extent to which each of these four mechanisms can be used to provide part or all of the necessary inter-system isolation or interference discrimination depends on the size and design of the earth and space station antennas, the orbital positions (in the GSO, or other orbits) and geographical coverage of the antennas of the space stations of the two systems, the extent to which each of the mechanisms may already have been employed to re-use frequencies within the individual systems, the cost and other, practical, operational factors.

The criteria for sharing between MSS service links and/or feeder links are based on the maximum acceptable levels of interference within MSS channels – as developed within appropriate ITU-R Recommendations – as well as agreed between MSS operators when they are engaged in inter-system coordination discussions.

2.3.2 Frequency sharing between MSS networks and other services

In certain MSS bands, other services, such as the fixed service (FS), are allocated on a co-primary basis with MSS. In these bands, sharing criteria have been developed to enable the two services to share without causing unacceptable levels of interference to one another. For example, Section II of RR Article 9 provides the coordination thresholds for sharing between MSS (space-to-Earth) or downlink emissions and terrestrial FS allocated within portions of the 1-3 GHz MSS bands; as well as hard limits (power flux-density limits) between non-GSO feeder link downlinks and terrestrial FS – operating in the same frequency bands (at 7 GHz and 15 GHz).

The ITU Radio Regulations identify the following frequency bands in the MSS for use, on a world-wide basis, by administrations wishing to implement the satellite component of IMT-2000 (see RR No. 5.351A): 1 525-1 544 MHz; 1 545-1 559 MHz; 1 610-1 626.5 MHz; 1 626.5-1 645.5 MHz; 1 646.5-1 660.5 MHz; 1 980-2 010 MHz; 2 170-2 200 MHz; 2 483.5-2 500 MHz; 2 500-2 520 MHz and 2 670-2 690 MHz.

Resolution 225 (WRC-2000) provides flexibility for the longer-term use of the bands 2 500-2 520 MHz/2 670-2 690 MHz.

Note that, in addition to the use of the MSS bands identified for the satellite component of IMT-2000, the FSS bands may be used for feeder links and other network connections in support of IMT-2000.

2.7 Global mobile personal communications by satellite systems

A global mobile personal communications by satellite (GMPCS) system is defined as “any satellite system (i.e. fixed, mobile, broadband or narrow-band, global or regional, geostationary or non-geostationary, existing or planned) providing telecommunication services directly to end users from a constellation of satellites”. This definition can cover a broad range of satellite configurations and related services.

GMPCS was the topic of the 1996 World Telecommunication Policy Forum (WTPF-96) which developed five Opinions that have been key to the development of a Memorandum of Understanding (MoU), associated Arrangements, and a regulatory framework for the implementation of services.

Briefly the five Opinions are:

Opinion 1 – The role of GMPCS in the globalization of telecommunications

Opinion 2 – The shared vision and principles of GMPCS

Opinion 3 – Essential studies by ITU to facilitate the introduction of GMPCS

Opinion 4 – Establishment of an MoU to facilitate the free circulation of GMPCS

Opinion 5 – Implementation of GMPCS in developing countries

Signatories to the MoU, (Administrations, system operators, terminal manufacturers, and others) agree to cooperate on issues concerning type approval, licensing, and marking of terminals as well as customs arrangements, and access to traffic data. The MoU indicates that “Signatories will periodically review the results and consequences of their cooperation under this *Memorandum of Understanding*. When appropriate, the Signatories will consider the need for improvements in their cooperation and make suitable proposals for modifying and updating the *arrangements*, and the scope of this GMPCS-MoU.” Yearly meetings are scheduled to accomplish this goal.

