Document IWG-2/027 r1
February 141, 2005
Author: Ralph Crenshaw

**** DRAFT ****
UNITED STATES

PRELIMINARY VIEWS ON WRC-07

WRC-07 Agenda Item: 1.17 to consider the results of ITU-R studies on compatibility between the fixed-satellite service and other services around 1.4 GHz, in accordance with Resolution **745 (WRC-03)**.;

ISSUE: At WRC-03, the Conference decided to make the bands 1 390-1 392 MHz and 1 430-1 432 MHz available for the fixed-satellite service (FSS), on a secondary basis, for feeder links in the (Earth-to space) and (space-to-Earth) directions, respectively, for non-GSO satellite systems in the MSS with service links operating below 1 GHz, and subject to Resolution **745**. Resolution **745** states that these bands are not available for use until the completion of IUT-R studies identified within Resolution **745**, the results of these studies reported to WRC-07 and decisions should be taken by WRC-07 accordingly. WRC-03 considered this allocation on a primary basis but decided to make the allocation on a secondary basis. The secondary allocation poses significant difficulties for the use of this band by the MSS due to the lack of protection of MSS feeder link earth stations from future primary frequency assignments and makes the implementation of regulatory provisions needed to protect MSS feeder links problematic.

BACKGROUND: At WRC-03, the Conference decided to make the bands 1 390-1 392 MHz and 1 430-1 432 MHz available for the fixed-satellite service (FSS) on a secondary basis for feeder links in the (Earth-to-space) and (space-to-Earth) directions, respectively, for non-GSO satellite systems in the MSS with service links operating below 1 GHz, and subject to Resolution **745** as follows:

> **1** that the additional allocations for the FSS on a secondary basis in the bands 1 390-1 392 MHz and 1 430-1 432 MHz for feeder links in the (Earth-to-space) and (space-to-Earth) directions, respectively, for non-GSO satellite systems in the MSS with service links operating below 1 GHz, shall not be used until the completion of ITU-R studies on all identified compatibility issues as shown in Annex 1 to this Resolution and the results of these studies shall be reported to WRC-07 and the decisions should be taken by WRC-07 accordingly;
>
> **2** to recommend that decisions taken by WRC-07, including any provisions for the protection of other services to which the bands in *resolves* 1 are allocated, and of passive services in the adjacent band, apply to all non-GSO FSS systems in these bands filed to the Bureau after 5 July 2003,

The band 1 350-1 400 MHz is allocated on a primary basis to the radiolocation, fixed and mobile services in Region 1 and to the radiolocation service in Regions 2 and 3, and the footnotes Nos. **5.149**, **5.338** and **5.339** also apply to this band. The band 1 400-1 427 MHz is allocated to the Earth exploration-satellite service (EESS) (passive), radio astronomy and space research (passive) services

on a primary basis in all Regions and footnote No. **5.340** also applies to this band. The band 1 427-1 429 MHz is allocated in all Regions to the space operation (Earth-to-space), fixed and mobile (except aeronautical mobile) service on a primary basis. The band 1 429-1 452 MHz is allocated on a primary basis to the fixed service in all Regions, to the mobile service (except aeronautical mobile) in Region 1 and to the mobile service in Regions 2 and 3. It should also be noted that footnote No. **5.341** also applies to the band 1 400-1 452 MHz and that footnote No. **5.342** also applies to the band 1 429-1 452 MHz in Region 1. As can be seen from this discussion of the existing allocations prior to WRC-03, additional allocations in the frequency region are quite complicated as many other services are potentially impacted.

The CPM-02 report indicated that there were significant technical challenges to be overcome in some areas if existing services, particularly passive services, were to be protected from harmful interference from the operation of feeder links around 1.4 GHz. The report also indicated that studies in ITU-R were incomplete for the radio astronomy, EESS (passive), space research, ~~(~~aeronautical mobile telemetry (AMT)~~)~~ and radiolocation services. This posed some difficulties for WRC-03 and the Conference decided to make the secondary allocation for the MSS feeder links subject to completion of this work.

Studies are on-going in various ITU-R groups to complete this technical work and to determine the technical and operational means of enabling the use of the MSS feeder link allocations while at the same time protecting the existing services. While the amount of work necessary is substantial, the United States believes that these secondary allocations around 1.4 GHz to the fixed-satellite service (FSS) for feeder links for non-GSO satellite systems in the MSS with service links below 1 GHz will support the development of new services on a global basis and be very beneficial to many administrations, especially those in developing countries.

Studies performed this study cycle have determined requirements for the protection of RA from FSS space-to-Earth feeder links and EESS (passive) from both space-to-Earth and Earth-to-space FSS feeder links in the bands being considered. These results are currently being used to develop recommendations. Test Reports and studies ~~which~~that have also been submitted demonstrate~~ing~~ the technical feasibility of protection of the passive services and that the degree of attenuation of unwanted emissions needed to protect the passive services is less than that required for two-frequency full-duplex FSS feeder link operations. The protection of RA and the FS from FSS earth stations can be based on existing recommendations. Studies concerning the protection of the FS from space-to-Earth feeder links have also been performed and a recommendation is being developed. Work on the protection of RADAR and AMT is pending responses from the relevant ITU study groups to requests for characteristics of systems that would be affected. To date responses have not been received, which ~~and the lack of response~~ is cause for concern and may prevent the completion of studies identified within Resolution 745 and needed for action by WRC-07.

Prior Conferences considered allocations on a primary basis to the FSS service for feeder links for non-GSO satellite systems in the MSS with service links operating below 1 GHz~~,~~. However, WRC-03 made the allocations on a secondary basis. Considering that a secondary service cannot claim protection from harmful interference from stations of a primary service to which frequencies are already assigned or may be assigned at a later date, this places the investment in feeder link earth stations at considerable risk. These feeder link earth stations should be afforded the same protection from future frequency assignments within a primary service that a station with a primary allocation is

afforded. Specifically, a coordination zone should be established around each feeder link earth station that would provide protection from future terrestrial primary frequency assignments.

U.S. VIEW: Test and demonstrations, submitted to WRC-03 and subsequently to the study groups during this study cycle, of the technical performance of MSS feeder link transmit system equipments~~,~~ have been validated by independent studies and, when compared with the results of studies considering the requirements of the passive services, demonstrate that the passive services in the band 1 400-1 427 MHz can be protected from unwanted emissions. The United States supports the completion of studies~~, and testing and demonstrations to validate such studies,~~ on operational and technical means to facilitate sharing around 1.4 GHz.~~,~~ ~~including the protection of the passive services in the band 1 400-1 427 MHz from unwanted emissions.~~ Upon the successful completion of these studies, ~~test and demonstrations,~~ the United States supports upgrading the allocation to primary, the implementation of appropriate~~d~~ provisions in the Radio Regulations to protect existing services and the use of the bands 1 390-1 392 MHz and 1 430-1 432 MHz by the fixed-satellite service (FSS) for feeder links for non-GSO satellite systems in the MSS with service links below 1 GHz. ~~In addition provisions should be incorporated in the Radio Regulations to protect these feeder link earth stations from future terrestrial frequency assignments within a primary service. Specifically, a coordination zone should be established around each feeder link earth station that would provide protection from future terrestrial primary frequency assignments.~~