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WRC-2003 Advisory Committee

IWG-2

Draft U.S. Proposal on WRC-03 Agenda Item 1.16

United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.16: *To consider allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution 127 (Rev.WRC-2000), provided that due recognition is given to the passive services, taking into account No. S5.340*

Background Information

A total of only 1.525 MHz (space-to-Earth) and 1.9 MHz (Earth-to-space) are presently allocated on a worldwide primary basis to the MSS below 1 GHz, and 300 kHz (Earth-to-space) is allocated for land MSS on a worldwide primary basis. These allocations are for both the MSS service links and MSS feeder links. Since these allocations were made at WARC-92 and WRC-95, the Radiocommunication Bureau has identified 25 non-GSO MSS networks at frequencies below 1 GHz at some state of coordination and 9 non-GSO MSS networks at the advance publication stage only. Yet it appears that many of the proposed networks cannot be implemented in the existing allocations, because there is not enough spectrum readily available in the allocated spectrum bands. Additional feeder link spectrum outside of the currently allocated bands would provide dedicated feeder link spectrum and free up existing allocations for scarce service link spectrum.

WRC-97 approved Resolution 127 to study sharing techniques for NVNG MSS < 1 GHz feeder links (Earth-to-space) in the 1390-1400 MHz band and space-to-Earth feeder links in the 1427-1432 MHz band. Sharing studies completed in the ITU-R under Resolution 127 with respect to the proposed allocation of spectrum for space-to-Earth feeder links (1429-1432 MHz) include: (a) protection of the radioastronomy service by controlling out-of-band emissions to meet Recommendation RA.769-1 levels of -255 dB (W/m²/Hz) for the 1400-1427 MHz band; (b) protection of EESS by meeting Recommendation SA.1029-1 requirements of -171 dBW/27MHz for in-band pfd levels; and (c) sharing with fixed and mobile services on the basis of not exceeding the pfd levels established for

sharing in the adjacent bands of $-146 \text{ dBW/m}^2/4 \text{ kHz}$ (since no level had been established for the 1429-1432 MHz band). Sharing studies that have been completed with respect to the proposed allocation of spectrum for Earth-to-space feeder links include: (a) protection of EESS by meeting Recommendation SA.1029-1 requirements of -171 dBW/27MHz for in-band pfd levels; and (b) sharing with the radiolocation service by equipping the non-GSO MSS satellites with adequate filtering. Protection of the radioastronomy service at nearby frequencies can be achieved by geographic separation of MSS uplinks from radioastronomy sites. In addition, sharing with the fixed, mobile, and passive services will be dependent on the characteristics of the respective services.

As a result of the favorable initial studies in these bands, WRC-00 placed on the proposed agenda for WRC-03 (subsequently approved by the ITU Council) Agenda Item 1.16, to consider allocations at 1390-1393 MHz for Earth-to-space feeder links and 1429-1432 MHz for space-to-Earth feeder links for the non-GSO MSS service with the understanding that Resolution 127 studies would be completed including testing of near-flight hardware to validate the theoretical studies approved earlier.

The U.S. proposes allocations in the 1390-1393 MHz (Earth-to-space) and 1429-1432 MHz (space-to-Earth) bands at WRC-03 for non-GSO MSS feeder links. The proposed allocations are in bands close to the passive services band at 1400-1427 MHz that must be protected from out-of-band and spurious emissions. Studies have shown that interference to radio astronomy and the other passive services can be avoided using various techniques including low-power transmitter levels, choice of modulation, symbol shaping, output filtering and band limiting filters, the use of which can minimize the band separation necessary to meet the recommended interference threshold levels for protection of these services. The U.S. expects that the hardware testing to be completed before WRC-03 will confirm the theoretical results already approved by the ITU-R for the protection of the passive services. The U.S. proposal for allocation of these bands to NGSO MSS feeder links follows.

Proposal:

**USA/ /1
(MOD)**

1 350-1 525 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339 ADD 5.XXX ADD 5.XXXA	1 350-1 400 RADIOLOCATION 5.149 5.334 5.339 ADD 5.XXX ADD 5.XXXA	
1 429-1 452 FIXED MOBILE except aeronautical mobile 5.341 5.342 ADD 5.YYY ADD 5.XXXA	1 429-1 452 FIXED MOBILE 5.343 5.341 ADD 5.YYY ADD 5.XXXA	

Reason: To provide additional allocations for non-GSO MSS feeder links (Earth-to-space) and (space-to-Earth) to support existing non-GSO MSS service allocations below 1 GHz.

**USA/ /2
(ADD)**

5.XXX *Additional allocation:* the band 1390-1393 MHz is also allocated on a primary basis to the mobile-satellite service (Earth-to-space). This allocation is limited to feeder links for non-geostationary orbit mobile-satellite systems with service links below 1 GHz.

Reason: To provide additional allocations for non-GSO MSS feeder links (Earth-to-space) to support existing non-GSO MSS allocations below 1 GHz.

**USA/ /3
(ADD)**

5.XXXA The use of the bands 1390-1393 MHz and 1429-1432 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**.

Reason: To provide protection to other primary services in the bands while enabling the additional allocations to the mobile-satellite service feeder links.

**USA/ /4
(ADD)**

5.YYY *Additional allocation:* the band 1429-1432 MHz is also allocated on a primary basis to the mobile-satellite service (space-to-Earth). This allocation is limited to feeder links for non-geostationary orbit mobile-satellite systems with service links below 1 GHz.

Reason: To provide additional allocations for non-GSO MSS feeder links (space-to-Earth) to support existing non-GSO MSS allocations below 1 GHz.