

IWG-7

Draft Proposal for the Work of the Conference

Agenda Item 7.2

RESOLUTION 801 (WRC-2000)

Agenda Item 7.2: to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution **801 (WRC-2000)**;

Background Information: The Table of Frequency Allocations currently extends to 275 GHz. Footnote **5.565**, which was modified by WRC-2000 to identify bands for passive service, states:

5.565 The frequency band 275-1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;
- Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the date when the allocation Table is established in the above-mentioned frequency band.

The science services have made extensive use of the spectrum above 275 GHz for several decades now, mostly through passive applications. A number of radio astronomy observatories operate in this area of the spectrum. Several major new instruments are planned, or are under construction and expect to begin operating in this range in the next few years. Foremost among these is ALMA, an international collaboration between the United States and a consortium of European countries, to build and operate a millimeter wavelength telescope that will be comprised of 64 antennas located in the Chajnantor region of the Chilean Andes.

Likewise, there are already spaceborne passive sensors utilizing frequency bands in the above 275 GHz region of the spectrum, and many more are planned for other bands. Among these is the Microwave Limb Sounder (MLS) planned for launch on the Aura satellite in July 2003. The MLS, which is an enhanced version of the payload currently operating on the Upper Atmospheric Research

Satellite (UARS), will provide data vital to the understanding of ozone depletion, transformation of greenhouse gases, and radiative forcing of climate change.

In addition to science-related passive service applications, research and experiments in use of the 275 to 1 000 GHz band for various active service applications has also been underway for some time. Although the propagation characteristics of the band within the earth's atmosphere (i.e., absorption and scattering) limit the usable range of most active systems compared to their use in lower frequency bands, there are also some benefits. These include an increase in range and angular resolution for radiolocation applications, resulting in the ability to discriminate "targets" that are much closer together than could be achieved in lower bands. For terrestrial communications, the severe propagation path loss conditions in this band facilitate frequency reuse and increases privacy for those that need it. Also, the bandwidth available in these higher frequency regions provides the opportunity for extremely high data rate communications and high processing gains for spread spectrum systems. Active applications in space are not impacted by the atmosphere and therefore receive the full benefit associated with the use of these higher bands.

Additionally, the Plenipotentiary Conference will be considering Inter American Proposals (IAPs) to remove the 3 000 GHz limit from the note to the definition of "radiocommunication" in the ITU and an accompanying Resolution inviting future World Radiocommunication Conferences to revise the terms and definitions in the Radio Regulations, with a view towards harmonization.

Proposal:

USA/ / 1
MOD

RESOLUTION 801 (WRC-~~2000~~3)

~~Preliminary~~ Agenda for the 2005/2006 World Radiocommunication Conference

The World Radiocommunication Conference (~~Istanbul, 2000~~), (Geneva, 2003),

Reasons: Editorial

resolves to give the view

USA/ / 2 **MOD**

2.3 to ~~review studies and consider allocations in~~ consider issues related to the frequency bands above 275 GHz;

Reasons: To review the issues related to the current and future use of this portion of the frequency spectrum.

USA/ / 3 **ADD**

2.3.1 to review studies and consider allocations in the frequency bands between 275 GHz and 1 000 GHz taking account of the needs of the passive science services, the amateur service and other services;

Reasons: Passive science sensors and radio astronomy are already utilizing frequency bands in the 275 - 1000 GHz region and in the past, the amateur service has often proven to be compatible with these services. These bands might also be used by active services which require high frequency reuse and high data rates for short range applications or applications above the atmosphere.

USA/ / 4 ADD

2.3.2 to review studies with a view to identifying future requirements for applications in the frequency bands above 1 000 GHz;

Reasons: Both active and passive services have demonstrated operations above 1000 GHz, and even above the 3 000 GHz limit contained in **1.5** of the Radio Regulations. The proposed change to the ITU Convention (Marrakech, 2002) also necessitates a review of studies addressing spectrum above 3 000 GHz in order to align definitions in the Radio Regulations and by doing so establish a mechanism through which future spectrum issues of an international character can be addressed.
