**UNITED STATES OF AMERICA**

**DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE**

**Agenda item 1.15**:*to consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz, in accordance with Resolution 767 (WRC-15)*

**Background Information**: WRC-19 agenda item1.15 considers the introduction of land-mobile and fixed service applications operating in the frequency range 275-450 GHz. At present, there are no allocations to radiocommunications services above 275 GHz in the Radio Regulations (RR’s).

However, recent advances in microwave technology make possible the use of the frequency range 275-450 GHz by active services for communications and other uses. While optical fiber is generally the least expensive terrestrial communications medium in terms of equipment cost per Gb/s-km, there are some applications where fixed radio systems of comparable bandwidth have unique advantages. In some locations, *e.g.*  highly urbanized areas, optical fiber has very high installation costs which greatly exceeds component costs. Optical fiber cannot be installed quickly in certain place for special events and may not be economical for short-term events at a given location. Optical fiber has a time latency greater than radio systems due to the index of refraction of the fiber material which results in a group velocity about 25% less than in radio systems. While for many applications this latency is insignificant, for some applications it is an issue. Finally, in case of disaster, especially earthquakes with ground rupture along a fault, fiber optics systems cannot be restored quickly and temporary radio systems with comparable capacity would be beneficial in restoring communications networks for both land line service and mobile service.

Footnote No. **5.565** identifies frequency bands in the range 275-450 GHz for use by administrations for radio astronomy, Earth exploration-satellite (passive) and space research (passive) service applications. Consistent with No. **5.565**, frequencies above 275 GHz can be utilized for active service applications such as those in the fixed and land mobile services, provided “all practicable steps” are taken to protect passive services. While the bands enumerated in No. **5.565** for various passive uses completely cover the 275-450 GHz under consideration in WRC-19 agenda item 1.15, Report ITU-R RA.2189[[1]](#footnote-1) concluded that "Sharing between radio astronomy and active services in the range 275-3 000 GHz is not problematic." Thus, frequencies identified for radio astronomy use but for neither earth exploration-satellite service (passive) nor space research service use other than those identified for earth exploration-satellite service (passive) or space research service can be used for fixed and land-mobile service applications, provided that suitable out-of-band emission limits are observed by these active service applications.

The active service applications are considered to not require any restrictions for their operation in the frequency bands identified in this proposal. Other frequency bands within 275-450 GHz may also be possibly identified for terrestrial fixed and mobile applications consistent with the sharing goals of No. **5.565** when sharing studies are sufficiently mature.

**Proposals**:

**MOD** **USA/1.15/1**

ARTICLE 5

Frequency allocations

**Section IV – Table of Frequency Allocations**

|  |  |  |
| --- | --- | --- |
| 248-3 000 GHz | | |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 275-3 000 (Not allocated) 5.565, ADD 5.THZ | | |

**ADD** **USA/1.15/2**

**5.THZ** The following frequency bands in the range 275-1 000 GHz are identified for use by administrations for terrestrial fixed and land mobile service applications: 286-296 GHz, 306-313 GHz, 356-361 GHz, 365-369 GHz, 392-397 GHz, 399-409 GHz, 411-416 GHz, and 434-439 GHz. Administrations wishing to make these frequency bands available for land-mobile and/or fixed service applications are urged to take all practicable steps to protect passive services operating according to No. **5.565** until the date when the Table of Frequency Allocations is established in the 275-450 GHz frequency range.. Land-mobile and fixed services applications shall ensure protection of radio astronomy sites and may require additional constraints (e.g. minimum separation distances and/or avoidance angles) to protect these sites on a case by case basis.

**Reasons**: While much of the spectrum in 275-450 GHz has been previously identified in No. **5.565** for Earth exploration-satellite service (passive) and space research service (passive), these bands have not been. Although these bands have been identified for radio astronomy service,. Report ITU-R RA.2189[[2]](#footnote-2) concluded that "Sharing between radio astronomy and active services in the range 275-3 000 GHz is not problematic." The additional restrictions in these bands to protect radio astronomy sites is based on studiesthat in a few locations local circumstances may require additional protection. Since these sites are generally in high altitude remote areas and atmospheric absorption propagation limits interference range these restrictions will have little impact on most terrestrial uses of these bands in populated areas.

**SUP USA/1.15/3**

RESOLUTION 767 (WRC-15)

Studies towards an identification for use by administrations for land-mobile and fixed services applications operating in the frequency range 275-450 GHz

Reasons: With the successful resolution of terrestrial mobile and fixed use in 275-450 GHz band with protecting of the passive services in the band, there is no longer a need for this resolution.

1. Report ITU-R RA.2189 “Sharing between the radio astronomy service and active services in the frequency range 275-3 000 GHz” indicates that the radio astronomy service can share with terrestrial systems due to propagation conditions and power limitations of current active services technologies. [↑](#footnote-ref-1)
2. Report ITU-R RA.2189 “Sharing between the radio astronomy service and active services in the frequency range 275-3 000 GHz” indicates that the radio astronomy service can share with terrestrial systems due to propagation conditions and power limitations of current active services technologies. [↑](#footnote-ref-2)