

UNITED STATES

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

**WRC-07 Agenda Item 1.4:** To consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev. WRC-03).

**Background Information:**

In WRC-03, the ITU adopted Resolution 228 concerning studies on frequency related matters for the future development of IMT-2000 and systems beyond IMT-2000. This resolution requested that:

- The ITU-R to further study technical and operational issues relating to the future development of IMT-2000 and systems beyond IMT-2000 and develop Recommendations as required.
- The ITU-R report in time for WRC-07 on the results of the studies on spectrum requirements and potential frequency usage suitable for the future development of IMT-2000 and systems beyond IMT-2000.
- The ITU-R studies should include sharing and compatibility studies with services already having allocations in potential spectrum for the future development of IMT-2000 and systems beyond IMT-2000, taking into account the needs of other services.

Sharing studies have been conducted within the ITU-R regarding sharing of IMT-2000 and systems beyond IMT-2000 (“IMT-Advanced”) with FSS receive earth stations. To provide protection of the FSS receive earth stations, some physical separation to the stations of the mobile terrestrial network is required. The magnitude of this separation distance depends on the parameters of the networks and the deployment of the two services, including the elevation angle of the earth station, the position of the IMT-Advanced terminal and/or base station relative to the FSS earth station and the amount of clutter loss. While the studies are still ongoing, the current range of separation distances associated with a single IMT-Advanced macro base station is from 36 to 70 km for the non-site specific studies (flat terrain model) if only long term interference is considered, and from 34-430 km if short term effects are also considered. It should be noted that the 34 kilometer distance for short-term interference does not include the effects of ducting. If ducting effects are taken into account, the separation distance associated with short term interference ranges from 140 – 430 km. For site specific studies, where actual terrain profiles were taken into account, the current range of separation distances for associated with a single IMT-Advanced macro base station is 1 to 110 km if only long term interference is considered and 270 km to 280 km if short term effects are also considered. It is noted that the 270 – 280 km distance corresponds to the results of a single (and only) site specific sharing study by Working

Party 8F that considered the effects of short-term interference It should also be noted that mitigation techniques are also under study that may reduce the separation distances. The minimum separation distances related to the IMT-Advanced micro and/or mobile station will generally be smaller than the ranges listed above.

Although the studies have differences in assumptions and methodologies and need to be continued to find convergence, they all show that ubiquitously deployed IMT-Advanced systems can not share in the same geographical area with FSS, when the FSS is deployed in a ubiquitous manner and/or with no individual licensing of earth stations, since no minimum separation can be guaranteed. Sharing may be feasible only when the receiving earth station is specific under the condition that the minimum required separation distance together with the criteria mutually agreed between the concerned administrations are observed.

The results of the ITU-R sharing studies show that sharing of the 3700 – 4200 MHz frequency band by IMT-Advanced systems and the fixed satellite system is not feasible within the same geographic area. This conclusion can be reached if one looks at either the single entry minimum distance separations required for long-term or short-term protection of an FSS receive station, where the smallest required separation is approximately 36 kilometers for an IMT-Advanced macro base station for the non-site specific studies; for site specific studies, the distance reduces to a minimum of 1 km. A similar conclusion is also reached if one looks at the minimum distance separation required for the protection of an FSS earth station from the aggregate interference effects of multiple IMT-Advanced macro or micro cell base stations.

By comparison, the radius of a large city is in the range of 15 – 30 kilometers. Hence, operation of even one FSS earth station in the 3700 – 4200 MHz within a city would preclude the use of a co-frequency IMT-Advanced system within that city, and vice-versa. Given that FSS receive stations are deployed throughout the United States in the 3700 – 4200 MHz band<sup>1</sup> and that IMT-Advanced systems would be deployed in a ubiquitous manner, it is concluded that sharing of the 3700 – 4200 MHz band between IMT-Advanced and FSS is not feasible in the United States.

FSS operators use the 3700-4200 MHz band to serve customers requiring a high degree of reliability. Among other things, these customers use the 3700-4200 MHz band for program distribution to cable head-ends and radio/TV broadcast stations, broadband communications to U.S. Navy vessels, commercial weather data distribution to airlines and pilots, and position location and status for trucking fleets.

In view of the results of the IMT-Advanced and FSS sharing studies to date within the ITU-R and the above considerations, the band 3700-4200 MHz should be removed from consideration as a candidate band for IMT-Advanced systems.

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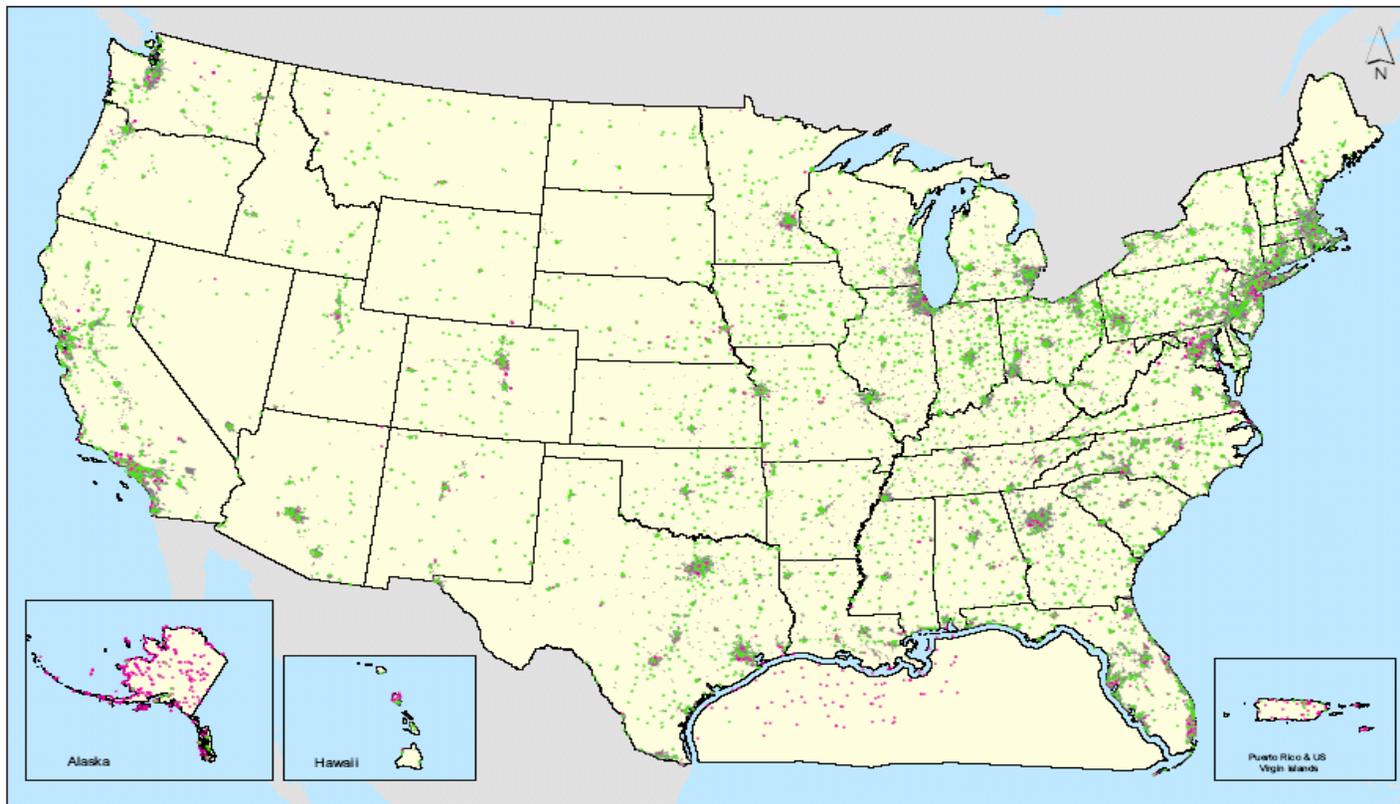
<sup>1</sup> Attachment 1 contains a map showing all transmit-receive and receive only earth stations currently in the FCC database.

**Proposal**

No Change to the Table of Allocation of the Radio Regulation with regard to the 3700 – 4200 MHz band.

**Reasons:** The results of the ITU-R sharing studies to date have shown that sharing of the 3700 – 4200 MHz frequency band by IMT-Advanced systems and the fixed satellite system is not feasible within the same geographic area.

**Attachment 1**  
**Locations of C-Band Earth Stations in the United States**



**3700-4200 MHz Earth Stations  
TR and RO**

**Legend**

- Earth Stations - RO
- Earth Stations - TR
- Urban Areas