

**UNITED STATES**  
**DRAFT PRELIMINARY VIEWS ON WRC-11**

**WRC-11 Agenda Item: 1.13** to consider the results of ITU-R studies in accordance with Resolution **551 (WRC-07)** and decide on the spectrum usage of the 21.4-22 GHz band for the broadcasting-satellite service and the associated feeder-link bands in Regions 1 and 3;

**ISSUE:** This agenda item is focused primarily on the implementation of the 21.4-22 GHz band for BSS in ITU Regions 1 and 3, however, there is need to establish adequate regulatory protection criteria to mitigate potential interference from Region 1 and 3 BSS to Region 2 Fixed and Mobile Services.

**BACKGROUND:** While the WRC-11 agenda item calls for studies in accordance with Resolution **551 (WRC-07)**, there is an existing ITU-R Resolution **525 (WRC-07)** that addresses interim procedures for the introduction of HDTV systems in the 21.4-22 GHz band in Regions 1 and 3. Resolution **525** was initially adopted at WARC-92, and the text of this Resolution has been modified at subsequent WRCs. The Annex to the English version of Resolution **525** (Rev. WRC-07) states:

*“All services other than the broadcasting-satellite service (BSS) in the band 21.4-22.0 GHz in Regions 1 and 3 operating in accordance with the Table of Frequency Allocations may operate subject to not causing harmful interference to BSS (HDTV) systems nor claiming protection from such systems.”*

The applicability of this text to services in Region 2 is ambiguous because the English language version of the text is missing two commas around the phrase “*in Regions 1 and 3*”. The French version of Resolution **525** (Rev. WRC-07), however, does include the missing commas, thereby indicating clearly that this text applies to services in Region 1& 3 only.<sup>1</sup> In accordance with provision No. **173** of the Constitution, the French version takes precedent.

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<sup>1</sup> Text from the French language version of the Annex to Resolution **525** (Rev. WRC-07)

*“Tous les services, autres que le service de radiodiffusion par satellite (SRS), fonctionnant dans la bande 21,4-22,0 GHz, dans les Régions 1 et 3, conformément au Tableau d'attribution des bandes de fréquences peuvent fonctionner à condition de ne pas causer de brouillage préjudiciable aux systèmes du SRS (TVHD), ni de demander à être protégés vis-à-vis de ces systèmes.”*

The intent of WRC-07 with regard to the applicability of Resolution **525** (Rev. WRC-07) to the services allocated in Region 2 is clarified further by examining the reference to this resolution in the Table of Frequency Allocations. Specifically, the reference to Resolution **525** (Rev. WRC-07) in Article **5** is made by footnote No. **5.530**. The No. **5.530** provisions however, are applicable only to BSS in Regions 1&3 and do not apply to any service in Region 2 (see No. **5.50** and **5.51**).

It is necessary for WRC-11 to clarify that in the band 21.4-22.0 GHz, the BSS networks in Regions 1&3 do not have a “super-primary” regulatory status vis-à-vis Fixed and Mobile services in Region 2.

### **Applicability of No. 9.11 for BSS in Regions 1 & 3 in the 21.4-22 GHz Band**

The coordination requirements in respect to terrestrial services for the BSS systems that were introduced in the subject band prior to 1 April 2007 are explicitly clear. Consistent with the WRC-03 version of Resolution **525** (Rev. WRC-03), these systems are subject to No. **9.11** coordination procedures if the power flux-density at the Earth’s surface produced by emissions from a space station, on the territory of any other country, exceeds:

- $-115 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between  $0^\circ$  and  $5^\circ$  above the horizontal plane; or
- $-105 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between  $25^\circ$  and  $90^\circ$  above the horizontal plane; or
- values to be derived by linear interpolation between these limits for angles of arrival between  $5^\circ$  and  $25^\circ$  above the horizontal plane.

These threshold values for triggering coordination with terrestrial services are consistent with reference power flux density for the BSS values that have been developed and given in Recommendation ITU-R BO.1776. It is important to recognize that the ITU-R BO.1776 is referenced in Resolutions **525** (Rev. WRC-07) and **551** (Rev. WRC-07).

The coordination requirements for the BSS systems in the 21.4-22.0 GHz band introduced after 1 April 2007 in respect to terrestrial services are conflicting and ambiguous. The interim procedures described in the Resolution **525** (Rev. WRC-07) stipulate that before the definitive procedures are established, the BSS in Region 1&3 in the band 21.4-22 GHz are subject to all relevant provisions of Articles **9** to **14** “except No. **9.11**”. This exception however, does not comport with the provisions of Resolution **33** (Rev. WRC-03) that provides for the implementation of the BSS systems prior to the adoption of the definitive regulatory provisions in a given band.<sup>2</sup> The *resolves 1* of Resolution **33** (Rev. WRC-03) requires applications of Articles **9** to **14** provisions without any exception. While Appendix **5** mandates the coordination threshold/condition for the BSS in the band 21.4-22.0 GHz in Regions 1&3 with respect to terrestrial services as the bandwidth overlap.

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<sup>2</sup> On applicability of Resolution **33** (Rev. WRC-03), see Resolution **525** (Rev. WRC-07), *considering c.*

Considering the ambiguity associated with the implementation of this allocation, the U.S. notes that sharing between satellite services in Regions 1 & 3 and terrestrial services in Region 2 can be most simply implemented through a pfd limits regime in Article **21**, Section **V**. In the present case, the pfd values developed and given in Recommendation ITU-R BO.1776 and also applied to the BSS systems that were introduced in the subject band prior to 1 April 2007 could be used as a power flux-density limit that would apply to all BSS systems in region 1&3 for purposes of sharing with the Fixed and Mobile services in Region 2. Such a limit would only apply to BSS satellite networks' beams on the territories of Region 2 countries.

**US View:** The U.S is of the view that, in the band 21.4-22.0 GHz, the terrestrial services of Region 2 and BSS of Regions 1 & 3 have equal regulatory rights and allocation status. The spectrum sharing regulatory procedures to be developed in response to WRC-11 Agenda Item 1.13, with regard to terrestrial services in Region 2, should be based on the principle of equality of right to operate in accordance with No. **4.8**.

In addition, an important inconsistency in the existing regulatory procedures for the BSS in the band 21.4-22 GHz in Regions 1&3 has been identified. Specifically, with regard to applicability of No. **9.11**, the interim procedures of Resolution **525** (Rev. WRC-07) are in conflict with the requirements of Resolution **33** (Rev. WRC-03) and Appendix **5**. The US is of the view that it is imperative to resolve this inconsistency in order to provide the necessary regulatory protection for the terrestrial services in the band 21.4-22 GHz in Region 2. In this regard, US is of the view that BSS of Regions 1 & 3 should comply with the pfd limits specified in Recommendation ITU-R BO.1776 but only on territories of Region 2 countries. The US supports inclusion of appropriate pfd limits in Article **21**, Section **V**.

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