United States of America

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE[1]

Agenda Item 1.2 (Res 746): to consider allocations and regulatory issues related to the Earth exploration-satellite (passive) service, space research (passive) service and the meteorological satellite service in accordance with Resolutions **746 (WRC-03)** and **742 (WRC-03)**;

Background Information: This proposal addresses ***resolves 1*** **of** Resolutions **746 (WRC-03)**, "to invite ITU-R to conduct sharing analyses between geostationary meteorological satellites operating in the space-to-Earth direction and the fixed, fixed-satellite and mobile services in the band 18.0-18.4 GHz to define appropriate sharing criteria with a view to extending the current 18.1-18.3 GHz geostationary meteorological satellite allocation in the space-to-Earth direction to 300 MHz of contiguous spectrum." Presently the meteorological-satellite (MetSat) service (space-to-Earth), limited to the geostationary-satellite orbit (GSO), is allocated by footnote **5.519** in the band 18.1-18.3 GHz. The band is allocated on a primary basis to the fixed-satellite service (FSS), the fixed service and the mobile service in all three Regions and these allocations also exist for these same services in the band 17.8-18.1 GHz in all Regions. In both bands, the FSS is allocated in both the space-to-Earth and Earth-to-space directions. Additionally, in the 18.1-18.4 GHz band, the FSS (space-to-Earth) allocation has associated with it Nos. **5.484A** and **5.516B**. The first provision applies to non-Geostationary FSS satellite systems. The latter provision states that the band 18.3-19.3 GHz has been identified for use by high-density applications in the FSS in Region 2.

WP-7B has been the lead ITU-R group concerned with analyzing the sharing potential with other services in the band and it has exchanged several Liaison Statements with WP-4A. As a consequence of the information provided by WP-4A, those involved in the design of the next generation GSO meteorological satellites have optimized the design to maximize the level of homogeneity between FSS and Metsat systems. It is envisioned that this would maximize compatibility and facilitate coordination under No. **9.7** for operation of both types of systems in the space-to-Earth direction.

In accordance with No. **5.516** the band 18.0-18.1 GHz in the Earth-to-space direction is used for feeder links for the broadcasting-satellite service. Compatibility studies have been performed to estimate the typical required separation distances in reverse band sharing situations between receiving MetSat earth stations and transmitting BSS feeder uplink stations. In the worst case, it has been determined that around 40 km separation is required. Therefore it is expected that with some care in situating the limited number of MetSat receive stations international coordination would rarely be required under No. **9.17A**.

While the expected design of the GSO MetSat satellite networks envisioned for operation in the 300 MHz wide band appears to be generally compatible with FSS systems being

[1] This is a replacement for the earlier U.S. proposal for this agenda item.

implemented, it would appear that, for Region 2, operating MetSat systems below 18.3 GHz would avoid several potential difficulties. Given the desire to have a common MetSat allocation in all three Regions, it is proposed to expand the additional allocation in No. **5.519** from 18.1-18.3 GHz to 18.0-18.3 GHz, including the limitation to geostationary satellites and the requirement to meet the provisions of Article **21**, Table 21-4.

In addition, ITU-R studies have shown that, in conjunction with extending the MetSat allocation, extending the existing FSS coordination arc principle in this band to the case of MetSat systems coordinating with FSS networks has the potential to reduce the workload of the Bureau in identifying affected administrations and fulfils the purposes envisioned by Resolution **901 (WRC-03)**. As such, a consequential modification to Table 5-1 of Appendix **5** to include this change is also proposed. It is noted that as with the current No. **9.7**, an administration may request, pursuant to No. **9.41**, to be included in requests for coordination involving the MetSat or FSS service in this band, indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix **8** exceeds 6%.

Proposal:

USA/ /1 MOD

5.519 *Additional allocation:* the band 18.0~~1~~-18.3 GHz is also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Its use is limited to geostationary satellites and shall be in accordance with the provisions of Article **21**, Table **21-4**.

Reasons: Expanding the current 18.1-18.3 GHz geostationary meteorological-satellite service (space-to-Earth) allocation to the band 18.0-18.1 GHz by modifying No. **5.519** will provide greater flexibility for the meteorological-satellite service and extend the current criteria (i.e., the limitation to geostationary satellites and the requirement to meet the provisions of Article **21**, Table 21-4) to protect existing services.

USA/ /2 ADD

5.519[A] In the band 18.0-18.1 GHz, earth stations of the meteorological satellite service (space-to-Earth) in Region 1 and 3 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix 30A, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link.

Reasons: Analysis has shown that under worst case assumptions a maximum separation distance of 40 km would be required between a Metsat receiving station and a BSS feeder-link transmitting station in order to protect the Metsat receiving station. This minimal separation distance should ensure that both Metsat receive stations and BSS feederlinks can effectively use this band. Nevertheless, this provision would ensure that Metsat receive stations could not affect the APP 30 A Plan.

USA/ /3 MOD

15.4-18.4 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>15.4-15.43</td><td colspan="2">AERONAUTICAL RADIONAVIGATION
5.511D</td></tr>
<tr><td>15.43-15.63</td><td colspan="2">FIXED-SATELLITE (Earth-to-space) 5.511A
AERONAUTICAL RADIONAVIGATION
5.511C</td></tr>
<tr><td>15.63-15.7</td><td colspan="2">AERONAUTICAL RADIONAVIGATION
5.511D</td></tr>
<tr><td>15.7-16.6</td><td colspan="2">RADIOLOCATION
5.512 5.513</td></tr>
<tr><td>16.6-17.1</td><td colspan="2">RADIOLOCATION
Space research (deep space) (Earth-to-space)
5.512 5.513</td></tr>
<tr><td>17.1-17.2</td><td colspan="2">RADIOLOCATION
5.512 5.513</td></tr>
<tr><td>17.2-17.3</td><td colspan="2">EARTH EXPLORATION-SATELLITE (active)
RADIOLOCATION
SPACE RESEARCH (active)
5.512 5.513 5.513A</td></tr>
<tr><td>17.3-17.7
FIXED-SATELLITE
(Earth-to-space) 5.516
(space-to-Earth) 5.516A 5.516B
Radiolocation
5.514</td><td>17.3-17.7
FIXED-SATELLITE
(Earth-to-space) 5.516
BROADCASTING-SATELLITE
Radiolocation
5.514 5.515 5.517</td><td>17.3-17.7
FIXED-SATELLITE
(Earth-to-space) 5.516
Radiolocation
5.514</td></tr>
<tr><td rowspan="2">17.7-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A
(Earth-to-space) 5.516
MOBILE
ADD 5.519 ADD 5.519[A]</td><td>17.7-17.8
FIXED
FIXED-SATELLITE
(space-to-Earth)
(Earth-to-space) 5.516
BROADCASTING-SATELLITE
Mobile 5.518
5.515 5.517</td><td rowspan="2">17.7-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A
(Earth-to-space) 5.516
MOBILE
ADD 5.519 ADD 5.519[A]</td></tr>
<tr><td>17.8-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A
(Earth-to-space) 5.516
MOBILE
ADD 5.519</td></tr>
<tr><td>18.1-18.4</td><td colspan="2">FIXED
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B
(Earth-to-space) 5.520
MOBILE
MOD 5.519 5.521</td></tr>
</table>

Reasons: Consequential to adding the additional 100 MHz in the band 18.0-18-1 GHz to **No. 5.519**. In addition, 5.519[A] ensures that Metsat receive stations cannot affect the App 30A Plan.

USA/ /3 MOD

TABLE 5-1 (*continued*) (Rev.WRC-03~~7~~)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **9.7** GSO/GSO (*cont.*)		3) 17.7-20.2 GHz, (Regions 2 and 3), 17.3-20.2 GHz (Region 1) and 27.5-30 GHz	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS		
		4) 18.0-18.3 GHz	i) Bandwidth overlap, and ii) any network in the FSS or MetSat service and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS or MetSat service		
		5~~4~~) Bands above 17.3 GHz, except those defined in § 3) and 4)	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS (see also Resolution **901 (WRC-03)**)		
		6~~5~~) Bands above 17.3 GHz	i) Bandwidth overlap, and ii) any network in the FSS or BSS, not subject to a Plan, and any associated space operation functions (see No. **1.23**)		

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			with a space station within an orbital arc of ±16° of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan, except in the case of a network in the FSS with respect to a network in the FSS (see also Resolution **901 (WRC-03)**)		
No. **9.7** GSO/GSO (*cont.*)		7~~6~~) All frequency bands, other than those in 1), 2), 3), 4), 5) and 6~~5~~), allocated to a space service, and the bands in 1), 2), 3), 4), 5) and 6~~5~~) where the radio service of the proposed network or affected networks is other than the space services listed in the threshold/condition column, or in the case of coordination of space stations operating in the opposite direction of transmission	i) Bandwidth overlap, and ii) Value of $\Delta T/T$ exceeds 6%	Appendix **8**	In application of Article 2A of Appendix **30** for the space operation functions using the guardbands defined in § 3.9 of Annex 5 of Appendix **30**, the threshold/condition specified for the FSS in the bands in 2) applies. In application of Article 2A of Appendix **30A** for the space operation functions using the guardbands defined in § 3.1 and 4.1 of Annex 3 of Appendix **30A**, the threshold/condition specified for the FSS in the bands in 4) applies

Reasons: Consequential modification to the additional allocation to MetSat in the band 18.0-18.1 GHz. ITU studies have shown that extending the ±8º coordination arc, currently applicable to FSS networks in this band, to the meteorological-satellite (MetSat) services in this band would reduce the workload of the Bureau in identifying affected administrations and the number of unnecessary coordinations for such systems while maintaining the rights of administrations to be included in requests for coordination involving the MetSat or FSS service in this band.