

**ATTACHMENT A**  
**to FCC Public Notice DA 20-1243**

**Recommendations presented at October 20, 2020, Meeting of the  
World Radiocommunication Conference Advisory Committee**

## **Maritime Aeronautical and Radar Services**

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEW ON WRC-23 AI 1.6**

**AGENDA ITEM 1.6:** to consider, in accordance with Resolution **772 (WRC-19)**, regulatory provisions to facilitate radiocommunications for sub-orbital vehicles;

**ISSUE:** The United States requires a stable regulatory framework for radiocommunications for sub-orbital vehicles.

**BACKGROUND:**

Sub-orbital vehicles must operate in the same airspace as conventional aircraft while transitioning to and from space. Stations on board sub-orbital vehicles have a need for voice/data communications, navigation, surveillance, and telemetry and tracking and command (TT&C) applications to safely and effectively complete various mission requirements. The current regulatory provisions and procedures for terrestrial and space services may or may not be adequate for international use of relevant frequency assignments by stations on board sub-orbital vehicles.

Resolution **772 (WRC-19)** calls for studying spectrum needs and appropriate modifications to the Radio Regulations to accommodate sub-orbital vehicle radiocommunications requirements, excluding any new allocations or changes to the existing allocations in Article **5**<sup>1</sup>. There are several U.S. Commercial Space Transportation industry and government initiatives that could benefit from modification of the Radio Regulations as a result of these technical, operational, and regulatory studies.

**U.S. VIEW:**

To pursue studies called for by Resolution **772 (WRC-19)** as a basis for possible new Radio Regulations to support the growing radiocommunications needs of sub-orbital vehicles. These studies should address maintaining a safe and efficient airspace for all users, avoiding harmful interference to other radiocommunication services in the same and adjacent frequency bands and to existing applications of the same service in which stations on board sub-orbital vehicles operate, and avoidance of adverse impact on conventional space launch systems.

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<sup>1</sup> ITU-R is also invited to identify, as a result of studies, whether there is a need for access to additional spectrum that should be addressed after WRC-23.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.7**

**Agenda Item 1.7:** Studies on a possible new allocation to the aeronautical mobile-satellite (R) service within the frequency band 117.975-137 MHz in order to support aeronautical VHF communications in the Earth-to-space and space-to-Earth directions.

**BACKGROUND:**

The frequency band 117.975- 137 MHz is allocated on a primary basis to the AM(R)S service and used for air-ground, ground-air and air-air systems, providing critical voice and data communications for air traffic management and airline operational control on a global basis. Resolution **428 (WRC-19)** invites WRC-23 to consider a new primary allocation to the AMS(R)S based on the results of sharing and compatibility studies. This new AMS(R)S service will support direct pilot-air traffic controller voice as well as data communications in oceanic and remote areas without modifying aircraft equipment.

**U.S. VIEW:**

The United States supports technical and regulatory studies under Resolution **428 (WRC-19)** for a new primary AMS(R)S service in the 117.975 – 137 MHz frequency band provided such an allocation is found to be compatible with existing services. The United States is of the view that this new allocation must protect current systems using existing primary services and not constrain planned usage of those systems.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEW ON WRC-23 AI 1.8**

**AGENDA ITEM 1.8:** to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems.

**ISSUE:** Resolution **171 (WRC-19)** invites the ITU-R to complete, in time for WRC-23, relevant studies of the technical, operational, and regulatory aspects of Resolution **155 (Rev.WRC-19)**, taking into account the progress obtained by International Civil Aviation Organization (ICAO) in the completion of Standards and Recommended Practices (SARPs) on the use of FSS for Unmanned Aircraft Systems (UAS) control and non-payload communications (CNPC) links. The resolution also invites the ITU-R to review footnote No. **5.484B** and Resolution **155 (Rev.WRC-19)**, taking into account the results of these studies.

**BACKGROUND:**

WRC-12 Agenda Item 1.3 first addressed UAS spectrum requirements, which included terrestrial and satellite-based CNPC links as well as the Sense and Avoid requirements. As a result, WRC-12 added a new aeronautical mobile (R) service (AM(R)S) frequency allocation in the 5 030-5 091 MHz band to support terrestrial CNPC links and determined that existing aeronautical radionavigation service (ARNS) were sufficient to support UAS sense and avoid requirements. ITU-R Report M.2204 “Characteristics and spectrum considerations for sense and avoid systems use on unmanned aircraft systems” identifies the ARNS bands available for UAS sense and avoid. WRC-12 further revised the existing AMS(R)S allocation in the 5 030-5 091 MHz band to support satellite-based command and control of UAS. While WRC-12 considered use of FSS satellites in additional frequency bands, it was unable to resolve the issues associated with FSS satellite-based CNPC links.

The use of FSS satellite-based CNPC links was re-examined under WRC-15 Agenda Item 1.5 and some frequencies in the 14/11 GHz bands and 30/20 GHz bands allocated to the FSS were identified, through footnote RR No. **5.484B**, to meet the satellite-based UAS CNPC link requirement. Since a number of aspects of CNPC link operations using FSS satellites were not yet complete, Resolution **155 (WRC-15)** identified the actions necessary to implement CNPC link operations using FSS satellites. In addition, Resolution **155 (WRC-15)** called for a review of the text of the resolution at WRC-23, to ensure that the actions necessary to implement CNPC link operations using FSS satellites had been addressed.

*Resolves* 16 in Resolution **155 (WRC-15)** called for WRC-19 to review and, if necessary, revise the power flux-density (pfd) limits provided in Annex 2 of the Resolution. As a result, the resolution was updated (see Resolution **155 (Rev.WRC-19)**). In addition, a new WRC-23

Agenda Item (AI 1.8) was created to consider the results of the actions identified in Resolution **155 (Rev.WRC-19)**.

*Resolves* 19 in Resolution **155 (WRC-15)** called for the completion of studies on technical, operational, and regulatory aspects of UAS CNPC systems along with the adoption of relevant ITU-R Recommendations defining the technical characteristics of satellite-based UAS CNPC Links and conditions of sharing with other services.

The ITU-R has been undertaking the development of new reports to address these *resolves*. These studies include preliminary draft new (PDN) report ITU-R M.[UA\_PDF] on the pfd limits in Annex 2 to protect the fixed service operating in the bands 14.0-14.47 GHz (see *resolves* 14, 15, and 16 of Resolution **155 (Rev.WRC-19)**), and PDN Report/Recommendation ITU-R M.[UAS CNPC\_CHAR] on the technical characteristics of UAS CNPC link Earth stations.

**U.S. VIEW:**

To support and complete the studies called for by Resolutions **171 (WRC-19)** and **155 (Rev.WRC-19)** to define the conditions for operating in the FSS (see *resolves* 19 of Resolution **155 (Rev.WRC-19)**) in the frequency bands for which No. **5.484B** already applies. Based on the results of studies, consider revisions to Resolution **155 (Rev.WRC-19)** with a view to finalizing the provisions needed to accommodate the use of FSS networks by UAS CNPC systems and to revise No. **5.484B** to provide clarity that the provisions apply to the use of earth stations on board unmanned aircraft.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEW ON WRC-23 AI 1.9**

**AGENDA ITEM 1.9:** to review Appendix **27** of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with Resolution **429 (WRC-19)**.

**ISSUE:** Aeronautical high frequency (HF) technologies are evolving, so Appendix **27** of the Radio Regulations needs to be updated to accommodate new digital technologies.

**BACKGROUND:**

Aeronautical mobile (R) service (AM(R)S) frequency bands in the range 2 850 – 22 000 kHz are used for long-distance aeronautical communications in remote and oceanic areas. The last substantive review of Appendix **27** of the ITU Radio Regulations was performed in 1982. Aviation is considering new technologies to significantly improve capacity, connectivity, and quality of service for aviation HF data and voice, including increased channel bandwidths for greater data throughput and digital voice.

**U.S. VIEW:**

To support studies called for by Resolution **429 (WRC-19)** to accommodate new digital technologies.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-23 AI 1.11**

**AGENDA ITEM 1.11:** to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System (GMDSS) and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)**;

**BACKGROUND:**

IMO has made changes to the Safety of Life At Sea (SOLAS) convention, to facilitate the addition of new satellite providers of the Global Maritime Distress and Safety System (GMDSS). One new satellite provider has been included in the GMDSS, and further providers are expected to be considered by the IMO. WRC-23 Agenda Item 1.11 through Resolution 361 (WRC-19), *resolves to invite the 2023 World Radiocommunication Conference 3* to consider the introduction of additional satellite systems into the GMDSS.

In fact, in October 2019 the International Maritime Organization (IMO) subcommittee for Navigation, Communication, and Search and Rescue (NCSR) received an application from one administration to add a GSO MSS system to be recognized as an additional GMDSS satellite provider. This system operates in the bands 1 610.0-1 626.5 MHz (Earth-to-space) and 2 483.5-2 500.0 MHz (space-to-Earth). The Iridium NEXT NGSO MSS system operates in the band 1616-1626.5 MHz and as of this year provides GMDSS in the band 1 621-1 626.5 MHz only) as a consequence of IMO approval and actions taken at WRC-19. Inmarsat provides GMDSS in the adjacent band above 1 626.5 MHz through its GSO MSS system.

Although GMDSS is a global system, the system advocated under this agenda item, is only capable of providing regional coverage for GMDSS. The IMO is in the process of evaluating this system. The Chinese system has not completed ITU-R coordination and notification.

**U.S. VIEW:**

The United States supports GMDSS modernization and could support additional satellite providers of GMDSS contingent upon demonstrating compatibility of proposed GMDSS operations with other satellite systems operating within the band 1610-1626.5 GHz, and with the radio astronomy service operating in the band 1610-1613.8 MHz. Further, the proposed system should complete ITU-R coordination and notification with other MSS systems operating within the band 1610-1626.5 MHz, and also obtain IMO approval prior to consideration by WRC-23. Finally, the United States will seek to ensure that any additional satellite providers of GMDSS demonstrate that there will be no detrimental effects to existing satellite providers of the GMDSS in the band 1610-16265 MHz and in the adjacent bands.

## **Terrestrial Services**

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.1**

**AGENDA ITEM 1.1:** to consider, based on the results of the ITU-R studies, possible measures to address, in the frequency band 4 800-4 990 MHz, protection of stations of the aeronautical and maritime mobile services located in international airspace and waters from other stations located within national territories, and to review the pfd criteria in No. **5.441B** in accordance with Resolution **223 (Rev.WRC-19)**;

**BACKGROUND:**

World Radiocommunication Conference 2015 (WRC-15) adopted No. **5.441B** which provides some countries with an identification for International Mobile Telecommunications (IMT) in the frequency band 4 800-4 990 MHz, or portions thereof, under certain conditions including the establishment of a power-flux density (pfd) limit to protect other mobile services. Technical studies to review this limit were conducted during the WRC-19 cycle; however, consensus was not reached. Discussions at WRC-19 resulted in a modification of No. **5.441B** to include additional countries in the footnote, and to further review the pfd limits at WRC-23. Resolution **223** was revised to include specific provisions relating to aircraft stations, fixed-service stations, and other ground-based stations of the mobile service operating in portions of the 4 800 – 4 990 MHz band through the following *resolves*:

*3 that in the frequency bands 4 800-4 825 MHz and 4 835-4 950 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. 9.21 by IMT stations in relation to aircraft stations, a coordination distance from an IMT station to the border of another country equal to 300 km (for land path)/450 km (for sea path) applies;*

*4 that in the frequency band 4 800-4 990 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. 9.21 by IMT stations in relation to fixed-service stations or other ground-based stations of the mobile service, a coordination distance from an IMT station to the border of another country equal to 70 km applies;*

In addition, WRC-19 decided while the pfd limits are subject to review at WRC-23 to not apply the protection of other mobile services through use of pfd limits from IMT stations in certain countries through the following *resolves*:

*5 that the power flux-density (pfd) limits in No. 5.441B, which is subject to review at WRC-23, shall not apply to the following countries: Armenia, Brazil, Cambodia, China, Russian Federation, Kazakhstan, Lao P.D.R., Uzbekistan, South Africa, Viet Nam and Zimbabwe.*

Some administrations heavily utilize portions of the 4.8-4.99 GHz frequency band for fixed

and mobile (including aeronautical) applications. Many different systems are currently operating in this band having had to migrate given new services being deployed in lower bands in the past. One example is small UAS datalinks that were migrated to this band. In the United States, the 4 940-4 990 MHz band has been the focus of action to expand access, including various opportunities for commercial mobile service operations.

**U.S. VIEW:**

The United States is of the view that protection of aeronautical mobile and maritime mobile service and/or applications of the primary Mobile Service in the frequency band 4 800-4 990 MHz cannot be fulfilled solely through application of No. **9.21**. However, the United States supports the study of the technical and regulatory conditions for the protection of aeronautical mobile and maritime mobile service and/or applications located in international airspace or waters (i.e. outside national territories) and operated in the frequency band 4 800-4 990 MHz. With respect to the review of the pfd criteria contained in No. **5.441B**, the continued protection of aeronautical mobile and maritime mobile service and/or applications of the Mobile Service must be ensured.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.2**

**AGENDA ITEM 1.2:** to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**;

**BACKGROUND:**

Mobile broadband plays a crucial role in providing access to businesses and consumers worldwide. According to ITU statistics, the number of active mobile-broadband subscriptions per 100 inhabitants continues to grow strongly, reaching 108 subscriptions per 100 inhabitants, with 18.4 percent year-on-year growth.<sup>1</sup> Ninety-three percent of the world's population lives within reach of a mobile broadband service, and the relatively small difference in the number of subscriptions between developed and developing countries demonstrates that connectivity is a priority among people in countries at all levels of development.<sup>2</sup> WRC-23 will consider the possibility of making available specific mid-band spectrum frequencies between 3.3 and 10.5 GHz, either on a regional or global basis. Sharing and compatibility studies will need to be conducted, with a view to ensuring the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, protection of services in adjacent bands.

The 3300 – 3400 MHz band is part of a globally-standardized band for 5G. 3GPP has specifications (n77 or 3.3-4.2 GHz band) for the operation of both Long- Term Evolution (LTE) and 5G NR in these bands and there are already significant deployments worldwide along with the required ecosystem to enable those deployments. Seventy percent or nearly 140 operators are investing their 5G deployments in this range. The 3300 – 3400 MHz band is also included in existing frequency arrangements harmonized in CITE<sup>3</sup> and the ITU-R<sup>4</sup>. In Region 2, the Radio Regulations footnote Nos. **5.429C** and **5.429D** provide primary allocations to the Mobile Service and identification for IMT respectively, while in other regions there are primary allocations to the Mobile Service via Nos. **5.429**, Nos. **5.429A**, and Nos. **5.429C**, with identifications to IMT via Nos. **5.429B** and Nos. **5.429E**.

The United States operates a number of high-resolution/powered land-based, aeronautical and maritime radars in the 3 300-3 400 MHz frequency band under the Radiolocation allocation.

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<sup>1</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

<sup>2</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

<sup>3</sup> PCC.II/REC.54 (XXIX-17).

<sup>4</sup> Rec. ITU-R M.1036-6 (10/2019).

Radiolocation systems in these bands are used for multi-functions including surface and air search. Within the United States, the 3.3-3.4 GHz band is also under consideration for mobile broadband use, while the United States continues to require protection of radiolocation at a number of locations throughout the United States. The results of previous ITU-R studies indicate the need for separation distances, exclusion zones and/or other technical measures due to the high power and widely deployed, land, air and sea operations of radars in this band.

**U.S. VIEW:**

In accordance with Resolution **245 (WRC-19)**, the United States supports studies on the sharing and compatibility between IMT and existing primary services operating in the 3300 – 3400 MHz band. The U.S. supports ensuring the protection of the existing primary services and that the existing primary services can continue operations without having additional regulatory or technical constraints imposed on these services. Taking the above into account, the United States supports appropriate action at WRC-23.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.2**

**AGENDA ITEM 1.2:** to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**;

**BACKGROUND:**

Mobile broadband plays a crucial role in providing access to businesses and consumers worldwide. According to ITU estimates, the number of active mobile-cellular telephone subscriptions per 100 inhabitants continues to grow strongly, reaching 108 subscriptions per 100 inhabitants, with 18.4 percent year-on-year growth for mobile broadband subscriptions.<sup>1</sup> Ninety-three percent of the world's population lives within reach of a mobile broadband service, and the relatively small difference in the number of subscriptions between developed and developing countries demonstrates that connectivity is a priority among people in countries at all levels of development.<sup>2</sup> WRC-23 will consider the possibility of identifying IMT in the bands 3 600-3 800 MHz and 3 300-3 400 MHz (Region 2); 3 300-3 400 MHz (amend footnote in Region 1); 7 025-7 125 MHz (globally); 6 425-7 025 MHz (Region 1); 10 000-10 500 MHz (Region 2). Sharing and compatibility studies will need to be conducted, with a view to ensuring the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, protection of services in adjacent bands.

The demand for mobile wireless broadband services such as IMT continues to grow dramatically as does the need for access to radio spectrum to support that growth.<sup>3</sup> The fifth generation of wireless technology (5G) will improve speed and reduce latency of wireless communications networks, and will enable services that revolutionize healthcare, transportation, agriculture, education, and many other facets of our economy and society. For example, 5G will support advanced services such as real-time, high-quality video for

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<sup>1</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

<sup>2</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

<sup>3</sup> Ericsson predicts that total mobile traffic is expected to increase by a factor of five over the next six years, reaching 164 exabytes per month by the end of 2025. Ericsson reports that today, smartphones generate about 95% of total mobile data traffic, and that by 2025, 5G networks will carry about half of the world's mobile data traffic. See Ericsson, Mobility Report at 20 (2020), <https://www.ericsson.com/49da93/assets/local/mobility-report/documents/2020/june2020-ericsson-mobility-report.pdf>. Cisco estimates that, by 2022, 22% of global internet traffic will come from mobile networks, up from 12% in 2017. See Cisco Systems Inc., Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2017-2022 White Paper (2019), <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-738429.html>.

telemedicine and the growth of the Internet of Things.

The 3400-4200 MHz is globally allocated to the Fixed-Satellite Service (FSS) (space-to-Earth) on a co-primary basis with Fixed and Mobile services in Regions 2. GSO FSS satellites have and continue to provide services across the Americas. In the contiguous United States, C-band GSO satellites provide services including distribution of television and radio broadcasting programmes, telephone and data services to consumers, back-haul to mobile terrestrial operators, and feeder links for mobile-satellite services. Additionally, C-band is used for reception of essential telemetry FSS satellite signals.<sup>4</sup> In Alaska, Hawaii, and insular territories, the C-band satellite services are more extensively used and relied upon for an even greater set of applications including essential VSAT networks, communications for emergency services, tele-medicine/education and backhaul for telecommunications restoration in the event of a disaster.

In the United States the Federal Communications Commission (FCC), as part of its efforts to facilitate 5G network deployments and ensure the continued access for C-band spectrum for FSS services, adopted new rules to make available 280 MHz of spectrum in the 3700 – 3980 MHz in the contiguous United States and maintained 200 MHz for FSS operations in the 4000-4200 MHz band. In Alaska, Hawaii, and insular territories, where dependence on C-band FSS services is more significant, the full 3700-4200 MHz band continues to be used to deliver FSS. The FCC also adopted domestic rules for the operation of the 5G networks and criteria to protect the FSS receive earth stations in adjacent bands, including a guard band from 3980-4000 MHz.<sup>5</sup>

#### **U.S. VIEW:**

In the United States, per RR No. **5.434**, the 3600 – 3700 MHz band is already identified for IMT.

The United States supports studies called for in Resolution **245 (WRC-19)** with respect to the 3600-3800 MHz frequency band, including sharing and compatibility with a view to ensuring the protection and not imposing additional regulatory or technical constraints on existing primary allocated services in this band. Taking the above into account, the United States supports appropriate action at WRC-23.

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<sup>4</sup> See *Expanding Flexible Use of the 3.7-4.2 GHz Band*, Report and Order and Order of Proposed Modification, FCC 20-22, at para. 9 (rel. Mar. 3, 2020) (“*FCC C-Band Order*”), <https://docs.fcc.gov/public/attachments/FCC-20-22A1.pdf>.

<sup>5</sup> See *FCC C-Band Order*. Interested stakeholders were encouraged to establish various multi-stakeholder industry groups to study and address various remaining issues related to the adopted rules in this band prior to the planned December 2020 auction.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.2**

**AGENDA ITEM 1.2:** to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**;

**BACKGROUND:**

WRC-23 will consider the possibility of making available specific mid-band spectrum frequencies between 3.3 and 10.5 GHz. Sharing and compatibility studies will need to be conducted, with a view to ensuring the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, protection of services in adjacent bands.

The 7 025-7 125 MHz is the only band that will be considered globally. In addition, Region 2 will consider 3 300-3 400 MHz, 3 600-3 800 MHz, and 10-10.5 GHz.

At WRC-19, CITEL had a common regional proposal, with the United States as a signatory, to support adoption of a WRC-23 agenda item for IMT identification in the mid-band frequencies. CITEL did not support the 6 425-7 025 MHz and 7 025-7 125 MHz bands (“6 GHz band”) that were eventually included in the agenda item. Taking this into account, CITEL administrations agreed to WRC-23 agenda item 1.2 and Resolution **245 (WRC-19)**.

The 6 425 - 7 125 MHz frequency range is allocated to the Fixed Satellite Service (6 425 – 7 075 MHz), Fixed and Mobile Services and portions of the band are used for Aeronautical Mobile Telemetry (AMT) in Region 2 (No. **5.457C**).

Regarding the Fixed Satellite Service (FSS) use of the band:

- 6 425 – 7 075 MHz: allocated globally to FSS.
  - o 6 425-6 725 MHz: allocated to the FSS (Earth-to-space) in all Regions.
  - o 6 725-7 025 MHz: allocated to the FSS (Earth-to-space) under the provisions of Appendix **30B** (No. **5.441**). The FSS allotment in 6 725 – 7 025 MHz is particularly important to the developing countries.
  - o 6 700-7 075 MHz: allocated to the FSS (space-to-Earth), limited to feeder links for non-geostationary satellite systems of the mobile-satellite service and is subject to coordination under No. **9.11A** (No. **5.458B**).
- 7 025 – 7 075 MHz: assigned in the United States for Satellite Digital Audio Radio Services (SDARS) for GEO feeder links in the Earth-space direction to provide audio programming to subscribers in the United States, Canada and the Caribbean.

Recently, the United States Federal Communications Commission (FCC) made 1200 megahertz of spectrum available for unlicensed use in 5.925-7.125 GHz.<sup>1</sup> This decision allows the unlicensed devices, such as RLANs (e.g. Wi-Fi 6E, LAA, NR-U), to share this spectrum with incumbent services under rules that are carefully crafted to protect the licensed services and to enable both unlicensed and licensed operations to continue to thrive throughout the band. In reaching this decision, the FCC rejected proposals to allow licensed mobile services to operate in the 6.425-7.125 GHz band. Recognizing the United States interest in harmonization of unlicensed applications in the Mobile Service in the 6 GHz band, the FCC's Chairman recently noted his interest in working with "other leaders around the world to harness the benefits of the 6 GHz band for Wi-Fi and then work together toward global harmonization of this spectrum."<sup>2</sup>

**U.S. VIEW:**

The United States prioritizes the need to ensure the protection of existing primary services in the 7 025–7 125 MHz band, including not supporting any additional constraints on the existing primary service allocations in 6 GHz, in any potential decisions made at WRC-23. Recognizing that 6 425-7 025 MHz is only under study in Region 1, and 7 025-7 125 MHz is the only band that will be considered globally under agenda item 1.2, the United States supports license-exempt deployments in the Mobile Service in the 6 GHz band.

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<sup>1</sup> See <https://www.fcc.gov/document/fcc-opens-6-ghz-band-wi-fi-and-other-unlicensed-uses-0>.

<sup>2</sup> See <https://docs.fcc.gov/public/attachments/DOC-365230A1.pdf>.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.2**

**Agenda Item 1.2:** to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**

**BACKGROUND:**

Mobile broadband plays a crucial role in providing access to businesses and consumers worldwide. According to ITU statistics, the number of active mobile-cellular telephone subscriptions per 100 inhabitants continues to grow strongly, reaching 108 subscriptions per 100 inhabitants, with 18.4 percent year-on-year growth for mobile broadband subscriptions.<sup>1</sup> Ninety-three percent of the world's population lives within reach of a mobile broadband service, and the relatively small difference in the number of subscriptions between developed and developing countries demonstrates that connectivity is a priority among people in countries at all levels of development.<sup>2</sup>

WRC-23 will consider the possibility of identifying IMT in the bands 3 600-3 800 MHz and 3 300-3 400 MHz (Region 2); 3 300-3 400 MHz (amend footnote in Region 1); 7 025-7 125 MHz (globally); 6 425-7 025 MHz (Region 1); 10 000-10 500 MHz (Region 2). Sharing and compatibility studies will need to be conducted, with a view to ensuring the protection of existing services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, protection of services in adjacent bands.

In Region 2, the 10-10.5 GHz frequency range is allocated on a primary basis to the Earth exploration-satellite (active) and radiolocation services, as well as primary allocation to the fixed and mobile services via footnote to numerous countries and is extensively used by a variety of applications of these services, including high-powered and highly-sensitive ground and airborne systems that are operational worldwide. The United States also operates Earth exploration-satellite (passive) sensors in the nearby 10.6-10.7 GHz band which is shared with fixed and mobile, except aeronautical mobile, services, subject to Resolution **751 (WRC-07)**.

**U.S. VIEW:**

The United States supports studies in the 10-10.5 GHz frequency range (Region 2 only) in accordance with Resolution 245 (WRC-19), while ensuring the protection of existing services (in-band and, as appropriate, adjacent bands) without having additional regulatory or technical

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<sup>1</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

<sup>2</sup> <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>.

constraints imposed on these services. Taking the above into account, the United States supports appropriate action.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.3**

**AGENDA ITEM 1.3:** to consider primary allocation of the band 3 600-3 800 MHz to mobile service within Region 1 and take appropriate regulatory actions, in accordance with Resolution **246 (WRC-19)**;

**BACKGROUND:**

Regions 2 and 3 already have a primary allocation to the mobile service in 3 600- 3 800 MHz, while in Region 1, the mobile service is secondary. This agenda item will consider the possibility and the potential implications of making it a primary service in Region 1 as well (e.g. co-primary globally).

In Region 2, the United States is part of Radio Regulations (RR) footnote No. **5.434**, which identifies 3 600 – 3 700 MHz for IMT and places technical conditions on the mobile service in 3 600 – 3 700 MHz. In addition to Nos. **9.17** and **9.18** coordination, No. **5.434** also states that “Stations of the mobile service, including IMT systems, in the frequency band 3 600-3 700 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004).”

**U.S. VIEW:**

In the interest of global harmonization and economies of scale, the United States supports studies to consider the primary allocation to the mobile service in the band 3 600-3 800 MHz in Region 1 while ensuring the protection of those services to which the frequency band is allocated on a primary basis and not impose undue constraints on the existing services and their future development.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-23 AI 1.4**

**AGENDA ITEM 1.4:** to consider, in accordance with Resolution **247 (WRC-19)**, the use of high-altitude platform stations as IMT base stations (HIBS) in the mobile service in certain frequency bands below 2.7 GHz already identified for IMT, on a global or regional level;

**BACKGROUND:**

WRC-23 agenda item 1.4 will consider the use of HIBS in certain frequency bands currently identified for IMT operations below 2700 MHz, or portions thereof, in accordance with Resolution **247 (WRC-19)**. The frequency bands, under consideration are:

- 694-960 MHz
- 1 710-1 885 MHz (1 710-1 815 MHz to be used for uplink only in Region 3)
- 2 500-2 690 MHz (2 500-2 535 MHz to be used for uplink only in Region 3, except 2 655-2 690 MHz in Region 3)

HIBS are high-altitude platform stations as IMT base stations intended to be used as part of terrestrial IMT networks and may use the same frequency bands with IMT base stations to provide mobile broadband connectivity. No. **1.66A** defines a high altitude platform station as a station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth. No. **4.23** limits transmissions to or from high altitude platform stations to bands specifically identified in Article 5.

WRC-2000 identified through No. **5.388A** the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz in Regions 1 and 3 and the bands 1885-1980 MHz and 2110-2160 MHz in Region 2 that may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications (IMT), in accordance with Resolution **221 (Rev.WRC-07)**. Furthermore, Resolution **221 (Rev.WRC-07)** provides the technical conditions that must be met by these high altitude platform stations to protect the various services allocated in these bands, including IMT stations, from emissions from co-channel interference caused by a HAPS operating as an IMT base station in neighboring countries.

The United States has a number of important uses for the bands under consideration for WRC-23 Agenda Item 1.4:

- Commercial wireless, public safety communications, and other private radio services operate within the 694-960 MHz band.
- Aviation safety systems operate in both the aeronautical radionavigation and aeronautical mobile (route) services in the 960-1164 MHz band. These systems operate in accordance with International Civil Aviation Organization standards in all phases of flight.
- Operational tactical radio relay, terrestrial telemetering operations, and fixed point-to-point microwave applications operate in the fixed and mobile/aeronautical mobile

services and space operations Earth-to-space in the 1780-1850 MHz band.

- The United States has also recently made the 2500-2690 MHz band, a swath of vital mid-band spectrum, available for mobile terrestrial networks, which includes IMT.

In addition, the United States has radiolocation radars in the aeronautical radionavigation service and meteorological radars in the radiodetermination service operating in the adjacent 2700-2900 MHz band and radio astronomy observatories operating in the adjacent 2690-2700 MHz range, subject to footnote RR No. **5.340** may be especially susceptible to transmissions from airborne stations.

#### **U.S. VIEW:**

The United States supports studies in accordance with Resolution **247 (WRC-19)** on the use of high-altitude platform stations as IMT base stations to ensure the protection of co-allocated primary services, and primary services in adjacent bands as appropriate and without imposing any technical or regulatory constraints on these services. Modifications to the identifications to IMT (**5.286AA, 5.317A, 5.341A, 5.341B, 5.341C, 5.346, 5.346A, 5.384A and 5.388**) in the Radio Regulations are outside the scope of WRC-23 Agenda Item 1.4; there should be no additional regulatory or technical constraints imposed on the deployment of terrestrial IMT in the frequency bands referred to in those footnotes.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.5**

**AGENDA ITEM 1.5:** to review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution **235 (WRC-15)**;

**BACKGROUND:**

Mobile broadband access has become a key driver of global economic growth, job creation and competitiveness and the COVID-19 pandemic has reinforced the critical importance of wireless connectivity in keeping citizens connected. The spectrum below 1 GHz is exceptionally suited for mobile broadband applications. In particular, the unique propagation characteristics of the bands below 1 GHz allow for in-building penetration and wider area coverage which in turn requires less infrastructure and facilitates service delivery to rural or sparsely populated areas.

WRC-23 Agenda Item 1.5 seeks to review the spectrum use of the frequency band 470-960 MHz in Region 1, including mobile allocations and IMT identification in all or parts of the band. Part of this band was studied under AI 1.1 of WRC-15 and resulted in new mobile allocations and identifications for IMT in portions of the range for some administrations in Regions 2 and 3.

Since then, 3GPP has specified Band 71 (the range 663 – 698 MHz / 617 – 652 MHz) as an operating band for 5G NR and equipment is already available for that band. The United States made that band available for mobile broadband licensees through a successful incentive auction which concluded in April 2017. Mexico successfully cleared the band in October 2018, thereby releasing the 600 MHz band for mobile broadband use. In April 2019, Canada concluded its 600 MHz auction. The momentum is growing for the 614-698 MHz and 698-790 MHz bands; as of WRC-19, a total of 8 countries in Region 2 and 7 in Region 3 have IMT identifications including these bands, with 28 countries in Region 3 have IMT identifications in the 698-790 MHz band. Internationally harmonized bands benefit consumers, through economies of scale in infrastructure, devices, chipsets, etc., thereby reducing network deployment and consumer costs while simultaneously enabling global roaming.

**U.S. VIEW:**

In the interest of global harmonization and economies of scale, the United States supports studies for additional allocations to the mobile service in Region 1, including potential identifications to IMT.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 9.1**

**Agenda Item 9.1, Topic b):** Review of the amateur service and the amateur-satellite service allocations in the frequency band 1 240-1 300 MHz to determine if additional measures are required to ensure protection of the radionavigation-satellite service (space-to-Earth) operating in the same band in accordance with Resolution **774 (WRC-19)**;

**BACKGROUND:**

The frequency band 1 240-1 300 MHz is allocated to the amateur service on a secondary basis, and under No. **5.282** of the Radio Regulations, the amateur-satellite service may operate in the 1 260-1 270 MHz frequency band, in the Earth-to-space direction, “subject to not causing harmful interference to other services operating in accordance with the Table (see No. **5.43**)” and other conditions. The frequency band 1240-1300 MHz is allocated to the radionavigation-satellite service (space-to-Earth) and (space-to-space) (RNSS) on a primary basis, along with other primary services.

Resolution **774 (WRC-19)** recognizes that the amateur service in the frequency band 1 240-1 300 MHz is currently used for amateur voice, data and image transmission in several countries in Europe and around the globe, and may transmit a variety of emission types including wideband, continuous and/or high equivalent isotropically radiated power (e.i.r.p.) transmissions. The Resolution also recognizes that some cases of harmful interference caused by emissions in the amateur service into RNSS (space-to-Earth) receivers have occurred, and resulted in investigations and in instructions to the operator of the interfering station to cease transmissions, and that, in accordance with No. **5.29** of the Radio Regulations, stations of a secondary service shall not cause harmful interference to stations of primary services to which frequencies are already assigned or to which frequencies may be assigned at a later date. Finally, the Resolution recognizes that administrations will benefit from the availability of studies and guidelines on protection of the RNSS (space-to-Earth) by the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz;

In Resolution **774 (WRC-19)**, WRC-19, in light of the above recognizings, resolved to invite the ITU-R sector:

- 1 to perform a detailed review of the different systems and applications used in the amateur service and amateur-satellite service allocations in the frequency band 1 240-1 300 MHz;
- 2 taking into account the results of the above review, to study possible technical and operational measures to ensure the protection of RNSS (space-to-Earth) receivers from the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz, without considering the removal of these amateur and amateur-satellite service allocations,

The Resolution instructs the Director of the Radiocommunication Bureau to include the results of these studies in his Report to WRC-23 for the purpose of considering appropriate actions in response to the two invites above. No changes to the Radio Regulations including changes to allocation status of the amateur or amateur-satellite services, or to the RNSS, is to be considered under this topic.

**U.S. VIEW:** The United States of the view that changes to the Radio Regulations are outside the scope of Agenda Item 9.1. For WRC-23 Agenda Item 9.1, Topic b), the United States supports studies to be carried out under Resolution **774 (WRC-19)**. The results of these studies should seek to identify possible technical and operational measures to ensure the protection of RNSS (space-to-Earth) receivers from the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz, without considering the removal of these amateur and amateur-satellite service.

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## **Space Services**

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-23 AI 1.13**

**AGENDA ITEM 1.13:** to conduct and complete, in time for WRC-23, sharing and compatibility studies in order to determine the feasibility of upgrading the SRS allocation in the frequency band 14.8-15.35 GHz to a primary basis, with a view to ensuring protection of the incumbent services, including in adjacent bands, in accordance with Resolution **661 (Rev. WRC-19)**.

**BACKGROUND:**

The 14.8-15.35 GHz band is currently allocated to the Space Research Service (SRS) on a secondary basis and used by the SRS to support direct data downlinks from SRS missions to earth stations located globally. In addition, the band supports Earth-to-space feeder uplinks and space-to-space inter-orbit return links in the data relay satellite (DRS) systems employed by several administrations. DRS systems in turn support a wide variety of operations for science and human spaceflight missions including launch, nominal operations, and contingencies. Resolution **661 (Rev. WRC-19)** calls for the investigation and identification of all relevant scenarios to be considered in sharing and compatibility studies

The 14.8-15.35 GHz frequency band is allocated to the Fixed and Mobile Services on a co-primary basis. The 15.35-15.4 GHz frequency band is allocated to the Earth Exploration Satellite Service (passive), Space Research Service, and Radio Astronomy Services on a co-primary basis; this frequency band is also subject to Radio Regulations **No. 5.340** which prohibits all emissions into the band.

**U.S. VIEW:**

The United States supports studies in accordance with Resolution **661 (Rev. WRC-19)** to consider a possible upgrade to the existing global allocation to the SRS in the frequency range 14.8-15.35 GHz, taking into account the need to provide protection to and to not impose constraints on incumbent services in this frequency band and adjacent frequency bands. It should be noted that the existing secondary allocation to the SRS (passive) in the band 15.2-15.35 GHz per No. **5.339** is not considered in this view.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-23 AI 1.14**

**AGENDA ITEM 1.14:** to review and consider possible adjustments of the existing or possible new primary frequency allocations to EESS (passive) in the frequency range 231.5-252 GHz, to ensure alignment with more up-to-date remote-sensing observation requirements, in accordance with Resolution **662 (WRC-19)**.

**BACKGROUND:**

Within the frequency range 231.5-252 GHz, the frequency bands 235-238 GHz and 250-252 GHz are allocated to the EESS (passive) for the use of passive microwave remote sensing systems. These two allocations were adopted at WRC-2000. However, scientific and technology developments for passive microwave sensor measurements have evolved in the last twenty years and some remote passive sensor systems are under development and could benefit from the ability to operate on some channel(s) within the frequency range 239-248 GHz, given the specific resonance frequency characteristics of ice clouds.

The 231.5-232 GHz frequency band is allocated on a co-primary basis to the Fixed and Mobile Services. The 232-235 GHz frequency band is allocated on a co-primary basis to the Fixed, Fixed Satellite (space-Earth) and Mobile Services. The 238-240 GHz frequency band is allocated on a co-primary basis to the Fixed, Fixed Satellite (space-Earth), Mobile, Radiolocation, Radionavigation, and Radionavigation-Satellite Services. The 240-241 GHz frequency bands are allocated on a co-primary basis to the Fixed, Mobile, and Radiolocation Services. The 241-248 GHz frequency band is allocated on a co-primary basis to the Radio Astronomy and the Radiolocation Services. The 248-250 GHz frequency band is allocated on a co-primary basis to the Amateur and Amateur Satellite Services. The 241-250 GHz frequency range is also subject to Radio Regulations **No. 5.149**, regarding the protection of Radio Astronomy sites.

Studies will be conducted to determine the potential impact of making adjustments and/or extensions of the EESS (passive) allocations within the frequency range 231.5-252 GHz on the primary services in these frequency bands in accordance with Resolution **662 (WRC-19)**.

**U.S. VIEW:**

The United States supports studies to review the existing EESS (passive) allocations and consider a possible adjustments to existing allocations or new primary or secondary allocations to the EESS (passive) within the frequency range 231.5-252 GHz in accordance with Resolution **662 (WRC-19)**, without unduly constraining the primary services currently allocated in this frequency range.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23 AI 1.15**

**Agenda Item 1.15:** To harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution **172 (WRC 19)**.

**BACKGROUND:**

The demand for on the move connectivity services provided by earth stations on aircraft and vessels continues to grow as the importance and access to internet-based applications for the aviation and maritime industry and their passengers increases. Given this reality WRC-19 adopted agenda item 1.15 to study the operation of earth stations on aircraft and vessels communicating with GSO FSS space stations in the 12.75-13.25 GHz (Earth-to-space) frequency band. The 12.75-13.25 GHz band is subject to Appendix **30B**.

Previous WRCs have adopted technical and regulatory provisions to allow aeronautical and maritime terminals to communicate with GSO FSS networks in other frequency bands. Resolution **902 (WRC-03)** addresses the use of earth stations on board vessels communicating with GSO FSS networks in the bands 5925-6425 MHz and 14-14.5 GHz (RR No. **5.457A**); Resolution **156 (WRC-15)** addresses the use of earth stations in motion (ESIM) communicating with GSO FSS networks in the 19.7-20.2 GHz and 29.5-30.0 GHz bands (RR No. **5.527A**); and Resolution **169 (WRC-19)** addresses the use of ESIMs communicating with GSO FSS networks in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz (RR No. **5.517A**).

**U.S. VIEW:**

The United States supports studies on the operation of earth stations on aircraft and vessels communicating with GSO FSS space stations in the 12.75-13.25 GHz (Earth-to-space) frequency band with the objective of developing appropriate technical and regulatory provisions to protect allotments/assignments in the Appendix **30B** Plan and other primary allocated services as called for in Resolution **172 (WRC-19)**.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-23**

**Agenda Item 1.16:** to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO fixed-satellite service (FSS) earth stations in motion (ESIM), while ensuring due protection of existing services in those frequency bands, in accordance with Resolution **173 (WRC-19)**

**BACKGROUND:**

The demand for broadband connectivity on the move is growing exponentially with users expecting high quality service when travelling. Most aeronautical and maritime routes rely on satellite services. Several non-GSO constellations in Ka-band are currently either operating or under development with designs to provide very high throughput connectivity with low latency to users regardless of their location on Earth. WRC-23 agenda item 1.16 will consider measures to promote the development of ubiquitous access to broadband connectivity through the development of global technical and regulatory provisions for the operation of ESIM with non-GSO FSS systems while protecting existing services in the frequency band.

Previous WRCs have adopted technical and regulatory provisions to allow ESIM to communicate with GSO FSS networks in other frequency bands. Resolution **156 (WRC-15)** addresses the use of earth stations in motion (ESIM) communicating with GSO FSS networks in the 19.7-20.2 GHz and 29.5-30.0 GHz bands (RR No. **5.527A**); and Resolution **169 (WRC-19)** addresses the use of ESIMs communicating with GSO FSS networks in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz (RR No. **5.517A**). In addition the European Electronic Communications Committee (ECC) has approved operations of non-GSO ESIM in portions of the Ka-band (17.3-20.2 GHz, 27.5-29.1 GHz and 29.5-30.0 GHz) and the Federal Communications Commission (FCC) has recently adopted rules to facilitate ESIM operations with non-GSO satellite systems in the 18.3-18.6 GHz, 19.7-20.2 GHz, 28.4-28.6 GHz, and 29.5-30 GHz bands on a primary basis. That ongoing proceeding is also considering regulatory provisions to protect terrestrial mobile systems in the adjacent 27.5-28.35 GHz band from out-of-band emissions of non-GSO ESIMs in 28.35-28.6 GHz.

In the frequency bands 17.7-20.2 GHz (space-to-Earth), where non-GSO ESIMs will be receiving, primary allocations include Fixed, Mobile, Fixed-Satellite, Broadcasting-Satellite, Earth Exploration-satellite, Space Research and Mobile-Satellite services in either Region 2, Region 1 and 3 and in most cases all three Regions.

In the frequency bands 27.5-30.0 GHz (space-to-Earth), where non-GSO ESIMs will transmit, primary allocations include Fixed, Mobile, Fixed-Satellite and Mobile-Satellite services in either Region 2, Region 1 and 3 or in most cases all three Regions.

**U.S. VIEW:**

The United States supports studies on the technical and operational characteristics of ESIMs and sharing and compatibility studies to develop technical and regulatory provisions for the operation of ESIM with non-GSO FSS systems in accordance with Resolution **173 (WRC-19)** with a view to ensuring the protection of and not impose additional constraints on existing services, including terrestrial services and GSO FSS, to which the frequency bands are allocated on a primary basis.

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**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-23**

**AGENDA ITEM 1.19:** to consider a primary allocation to the fixed-satellite service (FSS) in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while ensuring the protection of existing primary services in the band, recognizing the need of preserving and protecting the frequencies subject to the application of Appendix 30A, in accordance with Resolution **174 (WRC-19)**

**BACKGROUND:**

WRC-23 is considering the possibility of a new primary FSS allocation in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2. Current satcom trends encourage the development and implementation of new technologies in FSS for broadband applications to provide high-capacity and low-cost means of broadband communication even to the most isolated regions of the world. The use of satellite radiocommunication technology would facilitate the efficient use of this spectrum while aligning with the Region 1 Table of Allocations. The inclusion of an FSS downlink allocation in 17.3-17.7 GHz would provide a contiguous amount of FSS spectrum for broadband applications throughout Region 2.

The 17.3-17.7 GHz frequency band is allocated to the unplanned broadcasting-satellite service (BSS, by definition, a downlink) and the FSS in the Earth-to-space direction limited to BSS feeder links operating under Appendix **30A**. An FSS downlink allocation is technologically similar to the already allocated BSS allocation which currently employs a sharing regime through regular coordination under **No. 9.7** with a coordination trigger defined in Appendix 5. With respect to sharing with BSS feeder links, there are two interference paths – 1) ground path interference and 2) space path interference. For ground path interference, where a transmitting feeder link earth station may cause interference with nearby receiving FSS earth stations, sharing procedures exist through the application of site coordination through Article 6 of Appendix **30A** and using the coordination area determined by Appendix 7.

For space path interference, which involves a transmitting FSS space station and a receiving BSS feeder-link space station, Article 7 and Annex 4 to Appendix **30A** addresses the space path interference between transmitting BSS space stations and receiving BSS feeder-links space stations. This parallels a new transmitting FSS space station allocation. In addition, Recommendation ITU-R BO.1835 addresses compatibility between transmitting BSS space stations and receiving BSS feeder-link space stations, and its Annex concludes that such networks can operate compatibly with reasonable operational characteristics and with satellites spaced as close as 0.02 to about 0.3° apart, not including station-keeping.

**U.S. VIEW:**

The United States supports studies, in accordance with Resolution **174 (WRC-19)**, to develop

appropriate regulatory provisions and coordination mechanisms to protect Appendix **30A** BSS feeder links and BSS downlinks, to facilitate a new FSS downlink allocation in the frequency range 17.3-17.7 GHz in Region 2.

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