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## RESOLUTION 172 (WRC-19)

**Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)**

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

*considering*

- a)* that WARC Orb-88 created an allotment Plan for the use of the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz;
- b)* that WRC-07 revised the regulatory regime governing the use of the frequency bands referred to in *considering a)* above;
- c)* that the frequency band 12.75-13.25 GHz is currently allocated on a primary basis to the fixed, fixed-satellite (FSS) (Earth-to-space) and mobile services, and on a secondary basis to the space research (deep space) (space-to-Earth) service globally;
- d)* that the frequency band 12.75-13.25 GHz is used by the geostationary-satellite (GSO) FSS in accordance with the provisions of Appendix **30B** (No. **5.441**) and there are many existing GSO FSS satellite networks operating in this frequency band;
- e)* that the frequency bands in the space-to-Earth direction corresponding to the frequency band referred to in *considering d)* are the frequency bands 10.7-10.95 GHz and 11.2-11.45 GHz, which may be used by earth stations on aircraft and vessels, subject to not claiming protection from other applications of the FSS as well as other radiocommunication services to which the frequency band is allocated;
- f)* that the frequency band 10.6-10.7 GHz is allocated to the Earth exploration-satellite service (EESS) (passive);
- g)* that the availability of the frequency band 12.75-13.25 GHz (Earth-to-space) for earth stations on aircraft and vessels could provide administrations with more flexibility to use their allotments in the Appendix **30B** Plan, restricted to national territory;
- h)* that there is an increased need for in-flight and maritime connectivity which can be partially satisfied by allowing earth stations on aircraft and vessels to communicate with GSO space stations in the FSS, including in the frequency band 12.75-13.25 GHz (Earth-to-space);
- i)* that advances in technology, including the use of tracking techniques, allow earth stations on aircraft and vessels to operate within the characteristics of fixed earth stations of the FSS;

*j)* that the use of the frequency band 12.75-13.25 GHz (Earth-to-space) for links of earth stations on aircraft and vessels operating to GSO FSS satellite networks could contribute as an additional use of the spectrum and enhance broadband communications for passengers, and is not to be used or relied upon for safety-of-life applications,

*considering further*

*a)* that there is no methodology on how to protect neighbouring space stations of Appendix **30B** from earth stations on aircraft and vessels communicating with a GSO FSS space station;

*b)* that there is no information on coordination agreements reached among administrations regarding GSO FSS satellite networks;

*c)* that there is no established and agreed interference management procedure to address the potential interference arising from the use of earth stations on aircraft and vessels referred to in this Resolution, and the responsibility of the entities involved in this operation is not defined,

*noting*

*a)* that Resolution **156 (WRC-15)** addresses the use of earth stations in motion (ESIMs) communicating with GSO space stations in the FSS in the frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz;

*b)* that Resolution **158 (WRC-15)** calls for studies for the use of ESIMs communicating with GSO space stations in the FSS in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz;

*c)* that this conference has adopted Resolution **169 (WRC-19)**, which contains the regulatory conditions regarding ESIMs communicating with GSO FSS networks in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz under conditions contained in that Resolution;

*d)* that this conference has adopted Resolution **170 (WRC-19)**, which provides the procedure to ensure equitable access to frequency bands under Appendix **30B** by developing countries,

*recognizing*

*a)* that the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not result in any changes or restrictions to the existing Plan allotments and List assignments made under the Appendix **30B**;

*b)* that the technical characteristics of earth stations on aircraft and vessels communicating with a GSO space station in the FSS shall comply with the envelope defined in Appendix **30B** and/or with the coordination agreements reached between administrations;

*c)* that the current usage and future development of the allocated services in the frequency band 12.75-13.25 GHz (Earth-to-space) shall be protected without imposing additional constraints on them;

*d)* that, in the frequency bands referred to in *considering e)*, use by earth stations on aircraft and vessels would be for reception and therefore not cause interference;

- e) that for the frequency bands referred to in *considering e*), earth stations on aircraft and vessels shall not impose constraints on other allocated services nor claim protection from allocated services operating in accordance with the Radio Regulations;
- f) that the transmitting GSO space station communicating with earth stations on aircraft and vessels should protect the adjacent EESS (passive) operations referred to in *considering f*) in accordance with No. **5.340**;
- g) that administrations intending to operate earth stations on aircraft and vessels in Appendix **30B** frequency bands shall submit a commitment to ITU to undertake to immediately eliminate unacceptable interference or reduce it to an acceptable level should such interference be caused to terrestrial services;
- h) that a worldwide harmonized approach for earth stations on aircraft and vessels would benefit the administrations as well as industries;
- i) that Appendix **30B** requires the notifying administration to obtain the specific agreement of other administrations via Article 6 (§§ 6.6 and 6.16) regarding the inclusion of their territory in the service area of the satellite network;
- j) that there are established criteria in Annex 4 to Appendix **30B** comprising single-entry and aggregate values to protect Appendix **30B** assignments;
- k) that Article 44 of the ITU Constitution lays down the basic principles for the use of the radio-frequency spectrum and the GSO and other satellite orbits, taking into account the needs of developing countries;
- l) that the “first-come first-served” concept can restrict and sometimes prevent access to and use of certain frequency bands and orbital positions;
- m) that Resolution **2 (Rev.WRC-03)** resolves that “the registration with the Radiocommunication Bureau of frequency assignments for space radiocommunication services and their use do not provide any permanent priority for any individual country or groups of countries and do not create an obstacle to the establishment of space systems by other countries”,

*recognizing further*

that information provided by the Radiocommunication Bureau (BR) in ITU Radiocommunication Sector (ITU-R) studies indicates that a very significant number of Appendix **30B** submissions have been received by BR in the time period 1 January 2013 until 22 November 2019 and that the table provided in *recognizing further a*) of Resolution **170 (WRC-19)** summarizes the data provided by BR into those studies and shows the variations for the number of networks at the various stages,

*resolves*

that earth stations on aircraft and vessels addressed by this Resolution:

- a) shall not be used or relied upon for safety-of-life applications;
- b) shall not result in changes or restrictions to the existing Plan allotments and List assignments made under the Appendix **30B**, and their future development,

*invites the ITU Radiocommunication Sector*

1 to study the technical and operational characteristics and user requirements of earth stations on aircraft and vessels that communicate or plan to communicate with GSO space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) under the envelope of Appendix **30B** Article 6 recorded in the List or the Master International Frequency Register (MIFR) with favourable finding only, and to examine related existing regulatory provisions, subject to *recognizing a*);

2 to study the sharing and compatibility issues between earth stations on aircraft and vessels communicating with GSO space stations in the FSS and current and planned stations of existing services referred to in *considering c*) as well as services in adjacent frequency bands, to ensure protection of, and not impose undue constraints on, those services and their future development, taking into account the provisions of Appendix **30B**;

3 to study the responsibility of the entities involved in the operation of the earth stations on aircraft and vessels addressed by this Resolution;

4 to develop the criteria to ensure that earth stations on aircraft and vessels, as a new FSS application in this frequency band, shall not claim more protection or cause more interference than filed earth stations in Appendix **30B**;

5 to develop the technical conditions and regulatory provisions for the harmonized operation of earth stations on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), considering the results of the studies outlined in *invites the ITU Radiocommunication Sector* 1 and 2, and in particular without affecting the Appendix **30B** Plan;

6 to ensure that the operation of earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz under Appendix **30B** shall not adversely affect the criteria referred to in *recognizing j*), including the cumulative effect of multiple earth stations on aircraft and vessels;

7 to ensure that the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not limit the access of other administrations to their national resources in Appendix **30B** as well as implementation of Resolution **170 (WRC-19)**;

8 to ensure that the use of earth stations on aircraft and vessels addressed by this Resolution would not result in any additional status than that of the GSO network with which these stations communicate;

9 to ensure that the results of ITU-R studies are agreed by Member States taking into account the required consensus on this matter;

10 to complete studies in time for WRC-23,

*invites the 2023 World Radiocommunication Conference*

to consider the results of the above studies in *invites the ITU Radiocommunication Sector* and take necessary actions, as appropriate,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.