

## RESOLUTION 157 (WRC-15)

### **Study of technical and operational issues and regulatory provisions for new non-geostationary-satellite orbit systems in the 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz frequency bands allocated to the fixed-satellite service**

The World Radiocommunication Conference (Geneva, 2015),

*considering*

- a) that systems based on the use of new technologies associated with both geostationary-satellite orbit (GSO) and non-geostationary-satellite orbit (non-GSO) constellations are capable of providing high-capacity and low-cost means of communication even to the most isolated regions of the world;
- b) that GSO and non-GSO satellite orbits and associated spectrum are valuable resources and equitable access to these resources should be protected for the benefit of all countries in the world;
- c) that facilitating the use of new non-GSO systems has the potential to augment substantially the capacity, spectrum efficiency and benefits derived from GSO and non-GSO systems operating in the frequency bands: 3 700-4 200 MHz, 4 500-4 800 MHz, 5 925-6 425 MHz and 6 725-7 025 MHz,

*noting*

- a) that the Article **21** power flux-density (pfd) limits and Article **22** equivalent power flux-density (epfd↓) limits in the frequency band 3 700-4 200 MHz (space-to-Earth) and the Article **22** epfd↑ limits in the frequency band 5 925-6 725 MHz (Earth-to-space) were developed under agenda item 1.37 at WRC-03 based on a particular highly-elliptical orbit (HEO) configuration, while new non-GSO systems that seek to operate in these frequency bands may utilize different types of orbits;
- b) that Article **22** does not contain epfd↓ and epfd↑ limits for non-GSO systems in the frequency bands 4 500-4 800 MHz (space-to-Earth) and 6 725-7 025 MHz (Earth-to-space) allocated to the fixed-satellite service (FSS), the use of which is subject to the provisions of Appendix **30B**;
- c) that the Report of the Director of the Radiocommunication Bureau to this conference acknowledges that there may be a need for “reviewing or confirming” assumptions that led to the current values of the Article **21** and Article **22** power limits, taking into account the characteristics of systems recently submitted “and the overall trend for a growing interest in operating non-GSO FSS systems, with the view to ensure that all existing services are adequately protected”;

d) that specifically identified studies taking into account current technical and operational characteristics will help to determine appropriate Article **21** pfd limits and Article **22** epdf limits for the frequency bands 3 700-4 200 MHz, 4 500-4 800 MHz and 5 925-7 025 MHz for non-GSO systems,

*recognizing*

a) that enabling GSO networks and non-GSO systems to make the most efficient use of satellite orbits and frequency bands allocated to the FSS shall take into consideration the other services to which those frequency bands are also allocated on a primary basis;

b) that the frequency bands 3 700-4 200 MHz, 4 500-4 800 MHz and 5 925-7 025 MHz are also allocated in one or more Regions to the fixed and mobile services on a primary basis;

c) that in the frequency bands 3 700-4 200 MHz, 4 500-4 800 MHz and 5 925-7 025 MHz, non-GSO FSS systems are obligated by No. **22.2** not to cause unacceptable interference to or claim protection from GSO FSS networks;

d) that under No. **5.458B** the frequency band 6 700-7 025 MHz allocated to the FSS on a primary basis in the space-to-Earth direction is limited to feeder links for non-GSO systems of the mobile-satellite service (MSS);

e) that Nos. **5.440A** and **5.457C** were adopted to address the operation of aeronautical mobile telemetry (AMT) for flight testing by aircraft stations (see No. **1.83**) in the frequency bands 4 400-4 940 MHz and 5 925-6 700 MHz with respect to the FSS only using GSO networks;

f) that there are specific protection criteria, and protection levels defined in those criteria, for the FSS, the mobile service and the fixed service;

g) that new non-GSO systems with circular orbits shall ensure that existing non-GSO systems with highly-elliptical orbits should be protected,

*resolves to invite the ITU Radiocommunication Sector*

to study the following issues relating to non-GSO systems in the following frequency bands allocated to the FSS:

a) in the frequency band 3 700-4 200 MHz (space-to-Earth), identification of possible revision of Article **21**, Table 21-4 for non-GSO FSS satellites, with a view to enabling new non-GSO systems to operate in these FSS frequency bands, while ensuring that existing primary services, i.e. the mobile service and fixed service, are protected and maintaining the existing Article **21** pfd limits for GSO networks;

b) in the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space), the Article **22** epdf↓ limits and epdf↑ limits applicable to non-GSO systems with a view to enabling additional non-GSO systems to operate in these frequency bands, while ensuring that GSO networks are protected from unacceptable interference pursuant to No. **22.2** and existing protection criteria;

c) in the frequency bands 4 500-4 800 MHz (space-to-Earth) and 6 725-7 025 MHz (Earth-to-space), the possible development of Article 22  $epfd_{\downarrow}$  and  $epfd_{\uparrow}$  limits similar to those in other FSS frequency bands with a view to enabling non-GSO systems to operate in these frequency bands, while ensuring that GSO networks are protected from unacceptable interference pursuant to No. 22.2 and existing protection criteria taking into account *recognizing f)* above;

d) in the frequency band 6 700-7 025 MHz, the protection of feeder links for MSS systems operating in the space-to-Earth direction from unacceptable interference, pursuant to existing criteria, from non-GSO FSS system earth stations operating in the Earth-to-space direction;

e) in the frequency band 4 500-4 800 MHz (space-to-Earth), the development of appropriate regulatory provisions for non-GSO FSS systems to protect terrestrial services;

f) in the frequency bands 4 500-4 800 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space), the development of regulatory provisions to clarify that Nos. 5.440A and 5.457C would apply in a manner to ensure that non-GSO FSS systems do not cause harmful interference to, or claim protection from, AMT for flight testing by aircraft stations,

*further resolves*

1 that the results of studies referred to in the *resolves* above shall:

- in no way change the protection criteria and protection levels defined in those criteria for the GSO FSS, the fixed service and the mobile service;
- ensure protection of the existing non-GSO FSS systems with highly-elliptical orbits,

2 that new non-GSO systems that operate in FSS bands subject to the provisions of Appendix 30B shall ensure that the allotments appearing in the Plan and the assignments of the List of Appendix 30B will be fully protected,

*invites administrations*

to participate in the studies by submitting contributions to the ITU Radiocommunication Sector,

*instructs the Director of the Radiocommunication Bureau*

to include in his report, for consideration by WRC-19, the results of the ITU-R studies referred to in *resolves to invite the ITU Radiocommunication Sector* above.