

## RESOLUTION 539 (REV.WRC-19)

**Use of the frequency band 2 605-2 655 MHz in certain Region 3 countries  
by non-geostationary-satellite systems in the  
broadcasting-satellite service (sound)**

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

*considering*

- a)* that the frequency band 2 535-2 655 MHz is allocated under No. **5.418** to the broadcasting-satellite service (BSS) (sound) in certain Region 3 countries;
- b)* that the provisions of Resolution **528 (Rev.WRC-19)** currently limit the use of this frequency band by systems in the BSS (sound) to the upper 25 MHz of the frequency band;
- c)* that, prior to WRC-2000, there were no coordination procedures applicable to non-geostationary (non-GSO) BSS (sound) systems in this frequency band in relation to other non-GSO or GSO networks;
- d)* that satellite technology has now advanced to the stage where non-GSO systems in the BSS (sound) are technically and economically feasible when operated with high elevation angles and that there are practical designs available to ensure that the radiation of the non-GSO satellite in the BSS (sound) outside the main beam is kept at low levels;
- e)* that satellite systems in the BSS as described in *considering d)* can be used for the delivery of high-quality, spectrally efficient BSS (sound) to portable and mobile terminals;
- f)* that non-GSO systems in the BSS (sound) in the frequency band 2 630-2 655 MHz in Region 3 have been notified to ITU and are expected to be brought into use in the near future;
- g)* that, prior to WRC-2000, the protection of existing terrestrial services was addressed through the coordination procedures of No. **9.11**;
- h)* that the provision cited in *considering g)* may be inadequate to ensure the future deployment of terrestrial services in this frequency band;
- i)* that a regulatory procedure is required in order to meet the dual objectives of providing adequate long-term protection to existing and planned terrestrial services while not placing undue constraints on the development and implementation of non-GSO BSS (sound) systems;
- j)* that there are non-GSO systems being planned for operation in the BSS (sound) in the frequency band 2 605-2 655 MHz in Region 3 that have highly elliptical orbits;
- k)* that the ITU Radiocommunication Sector (ITU-R) has undertaken studies of the likely aggregate interference from a number of co-frequency broadcasting-satellite systems sharing with the terrestrial services on a co-primary basis;
- l)* that ITU-R has undertaken studies that assumed there is only one satellite active at any time in a non-GSO system operating in a highly elliptical orbit,

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*invites*

1 administrations planning to operate non-GSO BSS (sound) systems in accordance with this Resolution to take measures to design the system to minimize interference to terrestrial services outside the non-GSO BSS (sound) service area, for example as in *considering d)* above;

2 administrations whose territory is geographically close to the territory of an administration planning to operate a non-GSO BSS (sound) system in accordance with this Resolution, and for which there is a correspondingly high elevation angle to the active satellite, to take measures to facilitate the operation of non-GSO BSS (sound) systems,

*resolves*

1 that any BSS (sound) system using non-GSO orbits brought into operation in the frequency band 2 605-2 655 MHz in Region 3 shall be operated such that the minimum elevation angle over the service area is not less than 55°, for the purposes of sharing with terrestrial services;

2 that, before an administration notifies to the Radiocommunication Bureau (BR) or brings into use a frequency assignment for a BSS (sound) system using non-GSO satellites in the frequency band 2 630-2 655 MHz for which complete Appendix 4 coordination information or notification information has been received after 2 June 2000, and in the frequency band 2 605-2 630 MHz for which complete Appendix 4 coordination information or notification information has been received after 4 July 2003, the following regulatory arrangements shall apply:

The following mask of power flux-density (pfd) values at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall be used as the basis of the regulatory procedures of this Resolution:

-130	dB(W/(m <sup>2</sup> · MHz))	for	0° ≤ θ ≤ 5°
-130 + 0.4 (θ - 5)	dB(W/(m <sup>2</sup> · MHz))	for	5° < θ ≤ 25°
-122	dB(W/(m <sup>2</sup> · MHz))	for	25° < θ ≤ 45°
-122 + 0.2 (θ - 45)	dB(W/(m <sup>2</sup> · MHz))	for	45° < θ ≤ 65°
-118 + 0.09 (θ - 65)	dB(W/(m <sup>2</sup> · MHz))	for	65° < θ ≤ 76°
-117	dB(W/(m <sup>2</sup> · MHz))	for	76° < θ ≤ 90°

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

Furthermore:

- for angles of arrival of less than 76° in the pfd mask above, if the limits are exceeded, the notifying administration shall obtain explicit agreement from any administration identified by BR in its examination below;
- for angles of arrival from 76° to 90° in the pfd mask above, the coordination procedure with respect to those administrations identified by BR in its examination below will be that of No. 9.11;

3 that systems in the BSS (sound) using non-GSO satellites shall be limited to national services unless agreement has been reached to include the territories of other administrations in the service area;

4 that, within the context of this Resolution, an administration listed in No. **5.418** shall not have simultaneously two overlapping frequency assignments, one under that provision, and the other one under No. **5.416**;

5 that, as from 5 July 2003, BR and administrations shall apply the provisions of Articles **9** and **11** taking into account Nos. **5.418**, **5.418A**, **5.418B**, **5.418C** and this Resolution, as revised by WRC-03,

*instructs the Radiocommunication Bureau*

1 when applying *resolves 2*, to use the pfd mask in *resolves 2*; and

– for angles of arrival of less than 76°, identify the affected administrations which have a primary allocation to terrestrial services in the same frequency band and on whose territory the pfd is exceeded, and inform both the notifying and the affected administrations; at the notification stage, the lack of any necessary agreement is considered as non-conformity with No. **11.31**;

– for angles of arrival from 76° to 90°, identify the affected administrations which have a primary allocation to terrestrial services in the same frequency band and on whose territory the pfd is exceeded; and inform both the notifying and the affected administrations; at the notification stage, each notice shall be examined in the application of No. **11.32** and, if appropriate, under No. **11.32A** with respect to the probability of harmful interference that may be caused to assignments for which coordination could not be successfully completed;

2 as from 5 July 2003, to apply *resolves 5* in its examination of requests for coordination and notifications for any BSS (sound) systems using non-GSO satellites in the frequency band 2 630-2 655 MHz for which complete Appendix **4** coordination information or notification information has been received after 2 June 2000.

