

## RESOLUTION 684 (WRC-23)

**Studies on possible new allocations to the radionavigation-satellite service  
(space-to-Earth) in the frequency bands [5 030-5 150 MHz and  
5 150-5 250 MHz] or parts thereof\***

The World Radiocommunication Conference (Dubai, 2023),

*considering*

- a)* that radionavigation-satellite service (RNSS) systems and networks are intended to provide accurate information for many positioning, navigation and timing applications;
- b)* that, with growing user demands and technology improvement, the current RNSS allocations might not be sufficient to respond to requirements for higher positioning accuracy, network availability and robustness in the future;
- c)* that the frequency band 5 010-5 030 MHz is allocated worldwide to the RNSS (space-to-Earth) on a primary basis;
- d)* that the frequency band 5 150-5 216 MHz is allocated to the radiodetermination-satellite service (RDSS) (space-to-Earth) under the provisions described in No. **5.446**,

*noting*

- a)* that the frequency band 5 030-5 091 MHz is allocated to the aeronautical mobile (R) service (AM(R)S) (see No. **5.443C**), aeronautical mobile-satellite (R) service (AMS(R)S) (see No. **5.443D**) and aeronautical radionavigation service (ARNS) (see No. **5.444**) on a primary basis;
- b)* that the frequency band 5 091-5 150 MHz is allocated to the fixed-satellite service (FSS) (Earth-to-space) (see No. **5.444A**), aeronautical mobile service (see No. **5.444B**), AMS(R)S (see No. **5.443AA**) and ARNS (see No. **5.444**) on a primary basis;
- c)* that the frequency band 5 150-5 250 MHz is allocated to the FSS (Earth-to-space), the mobile, except aeronautical mobile, service subject to No. **5.446A** and the ARNS (see No. **5.444**) on a primary basis;
- d)* that the frequency band 5 250-5 350 MHz is allocated to the Earth exploration-satellite (active), mobile, except aeronautical mobile, (see Nos. **5.446A** and **5.447F**), radiolocation and space research (active) (see No. **5.447D**) services on a primary basis;

---

\* The appearance of square brackets around certain frequency bands in this Resolution is understood to mean that WRC-27 will consider and review the inclusion of these frequency bands with square brackets and decide, as appropriate.

## RES684-2

e) that the frequency bands 5 150-5 250 MHz and 5 250-5 350 MHz are used by wireless access systems, including radio local area networks, under the mobile service and their operation is subject to Resolution **229 (Rev.WRC-23)**;

f) that the AM(R)S in the frequency band 5 091-5 150 MHz is limited to surface applications at airports and operated in accordance with standards and recommended practices (SARPs) in Annex 10 to the Convention on International Civil Aviation;

g) that the ARNS in the frequency band 5 030-5 091 MHz is operated in accordance with SARPs in Annex 10 to the Convention on International Civil Aviation, and that SARPs are under development for the AM(R)S and AMS(R)S in this band,

### *recognizing*

a) that the possible addition of the RNSS (space-to-Earth) in the frequency bands [5 030-5 150 MHz and 5 150-5 250 MHz], or parts thereof, shall ensure protection of, and not impose constraints on, the development of incumbent services in the same and adjacent bands;

b) that the use of the frequency band 5 150-5 216 MHz by the RDSS is limited to feeder links in conjunction with the RDSS operating in the frequency bands 1 610-1 626.5 MHz and/or 2 483.5-2 500 MHz, and that the total power flux-density (pfd) at the Earth's surface shall in no case exceed  $-159$  dB(W/m<sup>2</sup>) in any 4 kHz band for all angles of arrival (see No. **5.446**);

c) that the characteristics and protection criteria for the receiving earth stations and also the transmitting space stations of RNSS in the frequency band 5 010-5 030 MHz are presented in Recommendation ITU-R M.2031;

d) that, in order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate pfd produced at the Earth's surface in the frequency band 5 030-5 150 MHz by all the space stations within any RNSS system (space-to-Earth) operating in the frequency band 5 010-5 030 MHz shall not exceed  $-124.5$  dB(W/m<sup>2</sup>) in a 150 kHz band (see No. **5.443B**);

e) that, in order not to cause harmful interference to the radio astronomy service (RAS) in the frequency band 4 990-5 000 MHz, RNSS systems operating in the frequency band 5 010-5 030 MHz shall comply with the limits in the frequency band 4 990-5 000 MHz defined in Resolution **741 (Rev.WRC-15)** (see No. **5.443B**);

f) that Recommendation ITU-R SM.1535 provides information on the protection of safety services from unwanted emissions,

*resolves to invite the ITU Radiocommunication Sector to conduct and complete in time for the 2031 world radiocommunication conference*

1 studies on spectrum requirements and technical and operational characteristics for the RNSS, in particular in the space-to-Earth direction between [5 030 and 5 250 MHz];

2 studies on sharing and compatibility between RNSS and the incumbent services allocated in the frequency range [5 030-5 250 MHz] and the adjacent-band services and studies related to the protection of the RAS in the frequency band 4 990-5 000 MHz, taking into account *recognizing a*),

*invites the 2031 world radiocommunication conference*

to consider, based on the results of studies, possible allocations to the RNSS (space-to-Earth) in the frequency bands [5 030-5 150 MHz and 5 150-5 250 MHz] or parts thereof,

*invites administrations*

to participate actively in ITU Radiocommunication Sector (ITU-R) studies and provide the technical and operational characteristics of the systems involved by submitting contributions to ITU-R,

*instructs the Secretary-General*

to bring this Resolution to the attention of the international and regional organizations concerned.