

RESOLUTION 678 (WRC-23)

**Use of the frequency band 14.8-15.35 GHz by the space research service
(space-to-space) (Earth-to-space) (space-to-Earth)
and associated transitional measures**

The World Radiocommunication Conference (Dubai, 2023),

considering

- a)* that there is a need for broadband communication downlinks in the space research service (SRS) for the purpose of transmitting future scientific data at high data transmission speeds;
- b)* that SRS operators need more stable regulatory certainty in order to be able to ensure long-term operation of systems in this service of public interest, and that operating on the basis of a secondary allocation conflicts with this objective;
- c)* that the frequency band 15.35-15.4 GHz is currently allocated to the radio astronomy service (RAS) on a primary basis;
- d)* that the frequency band 14.8-15.35 GHz is currently allocated to the fixed and mobile services on a primary basis;
- e)* that some applications in the aeronautical mobile service in the frequency band 14.8-15.35 GHz are non-commercial applications that need high flexibility of operations in order to achieve their mission;
- f)* that the helicopter television transmission system is used to transmit real-time television signals and data from a helicopter to the receiving stations on the ground or a ship, operated in the aeronautical mobile service in the frequency band 14.8-15.35 GHz,

noting

- a)* that Recommendations ITU-R F.758, ITU-R M.2068 and ITU-R M.2089 contain characteristics of, and protection criteria for, systems operating in the fixed, land and aeronautical mobile services, respectively, in the frequency range 14.5-15.35 GHz;
- b)* that Recommendations ITU-R RA.769, ITU-R RA.1513 and ITU-R RA.1631 contain protection criteria used for radio astronomical measurements in the frequency range 15.35-15.4 GHz, including percentage-of-time criteria, and reference radio astronomy antenna pattern to be used for compatibility analyses between non-geostationary orbit (non-GSO) systems and RAS stations based on the equivalent power flux-density (epfd) concept, respectively;
- c)* that Recommendation ITU-R SA.2141 provides technical and operational system characteristics for the SRS in the frequency range 14.8-15.35 GHz,

recognizing

- a) that the frequency band 14.8-15.35 GHz is currently used by data relay satellites in inter-satellite links, which permits the establishment of communications with satellites in non-GSO, including manned flights in the SRS;
- b) that the frequency band 14.8-15.35 GHz is planned for use by high-speed data links from non-GSO satellites within the SRS;
- c) that the use of the frequency band 14.8-15.35 GHz by the SRS should not cause harmful interference to stations of the RAS in the frequency band 15.35-15.4 GHz,

resolves

1 that, for the purpose of protecting in-band and adjacent-band services, the following conditions outlined in *resolves* 1.1 to 1.6 shall apply to the SRS in the frequency band 14.8-15.35 GHz:

1.1 any earth station in the SRS operating in the frequency band 14.8-15.35 GHz shall not exceed the power flux-density (pfd) level of $-156 \text{ dB(W/m}^2\text{)}$ for more than 2% of the time in a 50 MHz bandwidth in the frequency band 15.35-15.4 GHz, at any radio astronomy site observing in the frequency band 15.35-15.4 GHz;

1.2 the pfd produced in the frequency band 15.35-15.40 GHz by a space station of a GSO satellite network in the SRS (space-to-Earth) (space-to-space) shall not exceed the protection criteria specified in Recommendation ITU-R RA.769-2 for more than 2% of the time, at any radio astronomy site observing in the frequency band 15.35-15.4 GHz;

1.3 the epfd produced in the frequency band 15.35-15.40 GHz by all space stations of a non-GSO satellite system in the SRS (space-to-Earth) (space-to-space) shall not exceed $-240 \text{ dB(W/m}^2\text{)}$ for more than 2% of the time in a 50 MHz bandwidth in the frequency band 15.35-15.4 GHz at any radio astronomy site observing in the frequency band 15.35-15.4 GHz; the above limit shall be evaluated in accordance with Recommendation ITU-R RA.1513-2;

1.4 space stations in the SRS, operating in the space-to-space and Earth-to-space directions, shall not claim protection from stations in the fixed service; No. **5.43A** does not apply;

1.5 the pfd produced by a space station in the SRS at any point on the Earth's surface shall not exceed:

$-124 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for space-to-space links;

$-145.6 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for space-to-space links for more than 1% of time within a 24-hour period and

$-138 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for space-to-Earth links;

1.6 receiving earth stations in the SRS shall not claim protection from stations in the aeronautical mobile service operating in the frequency band 14.8-15.35 GHz within the respective border(s) of neighbouring countries, unless otherwise agreed between the administrations; No. **9.18** does not apply to stations in the aeronautical mobile service,

instructs the Director of the Radiocommunication Bureau

that, in reviewing the findings under No. **11.50** of the frequency assignments to a station in the space research service (space-to-space) (Earth-to-space) (space-to-Earth) in the frequency band 14.8-15.35 GHz, recorded in the Master International Frequency Register (MIFR) prior to 16 December 2023, the Bureau shall review as follows:

- a)* the original date of receipt of the recorded assignment in the MIFR shall be kept;
- b)* the Bureau shall examine each frequency assignment recorded in the MIFR in accordance with No. **11.31**;
- c)* when the examination with respect to No. **11.31** leads to a favourable finding, the assignment shall be upgraded to a primary status;
- d)* when the finding with respect to No. **11.31** is unfavourable, the assignment shall be modified in the MIFR to “for information purposes” and subject to application of No. **8.5**, only if the administration undertakes that it will be operated in accordance with No. **4.4**; otherwise the assignment shall be removed from the MIFR.