

RESOLUTION 743 (WRC-03)

**Protection of single-dish radio astronomy stations in Region 2 in the
42.5-43.5 GHz band**

The World Radiocommunication Conference (Geneva, 2003),

considering

- a)* that the band 42.5-43.5 GHz is allocated to the radio astronomy service (RAS) on a primary basis, and that both continuum and spectral line observations are conducted in this band;
- b)* that there are primary allocations to the fixed-satellite service (FSS) (space-to-Earth) and to the broadcasting-satellite service (BSS) in the 42-42.5 GHz band;
- c)* that a geostationary (GSO) FSS or BSS satellite operating in the 42-42.5 GHz band could encounter great difficulty in meeting the values given in No. **5.551I** for single-dish radio telescope observations in the 42.5-43.5 GHz band for 100% of the time;
- d)* that an FSS or BSS satellite or system operating in the 42-42.5 GHz band would encounter great difficulty in meeting the power flux-density (pfd) level of -153 dB(W/m²) in any 500 kHz for GSO satellites or the equivalent pfd (epfd) level of -246 dB(W/m²) in any 500 kHz for any non-GSO system for single-dish radio telescope spectral-line observations near the 42.5 GHz band edge of the 42.5-43.5 GHz band, even when all practicable technical or operational measures to reduce the potential for interference detrimental to the RAS stations are employed;
- e)* that because there are relatively few RAS stations operating single-dish telescopes in the band 42.5-43.5 GHz, and because there are expected to be relatively few FSS or BSS earth stations operating in the 42-42.5 GHz band, it may be feasible for both services to employ technical or operational measures, including but not limited to such interference mitigation techniques as geographical isolation, time sharing, etc., in order to reduce the potential for interference detrimental to the RAS stations operating in this band;
- f)* that, taking into account the above *considerings*, it should be feasible to rely on arrangements between concerned RAS and FSS/BSS administrations to ensure that the unwanted emissions from FSS or BSS satellites and systems in the 42-42.5 GHz band do not cause interference detrimental to RAS stations in Region 2 conducting spectral-line observations in the 42.5-42.77 GHz band,

resolves

- 1 that a GSO FSS or BSS satellite in the band 42-42.5 GHz shall not exceed the values given in No. **5.551I** for more than 2% of the time at any radio astronomy station in Region 2 registered as a single-dish radio telescope in the 42.5-43.5 GHz band;

RES743-2

2 that an administration that plans to operate a GSO FSS or BSS satellite or a non-GSO FSS or BSS system in the 42-42.5 GHz band shall take all practicable steps to avoid exceeding the pfd value of $-153 \text{ dB(W/m}^2\text{)}$ in any 500 kHz for a GSO satellite, and the epfd value of $-246 \text{ dB(W/m}^2\text{)}$ in any 500 kHz for any non-GSO system in the 42.5-42.77 GHz band, for more than 2% of the time, at the site of a radio astronomy station registered as a single-dish radio telescope in Region 2;

3 that in the event that an administration planning to operate a GSO FSS or BSS satellite or a non-GSO FSS or BSS system in the band 42-42.5 GHz has taken all practicable steps to avoid exceeding the values and percentage of time criterion in *resolves 2* in the 42.5-42.77 GHz band, but that nevertheless would not meet them, the administration planning to operate such a satellite or systems shall enter into discussions with the administration operating the affected radio astronomy station in Region 2 to arrive at a mutually satisfactory arrangement with respect to the unwanted emissions produced into the band 42.5-42.77 GHz;

4 that *resolves 1, 2 and 3* shall apply with respect to any radio astronomy station in Region 2 registered as a single-dish radio telescope in the band 42.5-43.5 GHz that was in operation prior to 5 July 2003 and that has been notified to the Radiocommunication Bureau before 4 January 2004, or that was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for an FSS or BSS satellite or system to which this Resolution applies (see Note 1);

5 that an administration notifying a radio astronomy station in Region 2 as a single-dish radio telescope after the dates provided in *resolves 4* may seek an agreement with administrations that have authorized FSS or BSS satellites or systems to which this Resolution applies,

invites ITU-R

to conduct studies and develop Recommendations to establish the appropriate balance between the percentage of time that GSO satellites operating in the 42-42.5 GHz band exceed the single-dish values in No. **5.551I** at the site of a radio astronomy station and the associated impact on radio astronomy observations.

NOTE 1 – For purposes of No. **5.551H**, No. **5.551I** and *resolves 4* of this Resolution, the radio astronomy stations currently under construction in Sierra Negra, Mexico, $18^\circ 59' \text{ N}/97^\circ 18' \text{ W}$ (station Volcan Sierra Negra) and San Pedro de Atacama, Chile, $23^\circ 20' \text{ S}/67^\circ 44' \text{ W}$ (station Atacama Large Millimeter Array) to conduct observations in the 42.5-43.5 GHz band, shall be considered to have been in operation prior to 5 July 2003 if they are notified to the Radiocommunication Bureau before 1 January 2005.