

RECOMMENDATION ITU-R SA.1260

FEASIBILITY OF SHARING BETWEEN ACTIVE SPACEBORNE SENSORS AND OTHER SERVICES IN THE VICINITY OF 410-470 MHz

(Question ITU-R [Doc. 7/12])

(1997)

The ITU Radiocommunication Assembly,

considering

- a) that synthetic aperture radars can measure soil moisture and forest biomass and can detect buried geologic structures such as faults, fractures, synclines and anticlines;
- b) that experimental synthetic aperture radars mounted on aircraft have demonstrated the potential for making these measurements;
- c) that the need for monitoring forests was emphasized at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, 1992;
- d) that Resolution 712 (Rev.WRC-95) of the World Radiocommunication Conference (Geneva, 1995) seeks provision of up to 3.5 MHz of frequency spectrum to the Earth exploration-satellite (EES) service (active) in the frequency range 420-470 MHz;
- e) that Recommendation ITU-R SA.577 establishes a requirement for bandwidths in the range of 10-40 MHz for these measurements;
- f) that these radars must operate at frequencies below 500 MHz in order to penetrate dense vegetation and the Earth's surface;
- g) that worldwide, repetitive measurements require the use of spaceborne synthetic aperture radars;
- h) that the 410-450 MHz range of frequencies would be suitable to satisfy all requirements including the maximum bandwidth requirements, for spaceborne active sensors;
- j) that frequency bands between 410 and 450 MHz are currently allocated to the radiolocation, fixed, amateur and mobile services;
- k) that other uses are made of portions of these bands including wind profilers in the range 440-450 MHz and extra-vehicular communications between spacecraft and astronauts in the 410-420 MHz band;
- l) that sharing between a spaceborne synthetic aperture radar and other services has been studied;
- m) that spaceborne synthetic aperture radars would produce power flux-densities (pfd) at the Earth's surface in excess of the pfd levels likely to be imposed in frequency bands near 400 MHz allocated to the fixed and mobile services in order to protect fixed and mobile operations;
- n) that co-frequency sharing with wind profilers is likely to be unfeasible due to interference to the spaceborne active sensor;
- o) that further study would be required to determine compatibility with extra-vehicular communications between spacecraft and astronauts in the frequency band 410-420 MHz;
- p) that synthetic aperture radars and the amateur service (primary in Region 1 and secondary in Regions 2 and 3) should be able to coexist in the band 430-440 MHz, by taking appropriate technical and operational measures,

recommends

- 1** that spaceborne synthetic aperture radars and fixed and mobile services not share common frequency bands;
- 2** that sufficient frequency separation between spaceborne synthetic aperture radars and wind profilers be provided;

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3 that consideration of an allocation for active spaceborne sensors be limited to the 430-440 MHz frequency band due to sharing considerations taking into account § j) and k) and § 1 and 2;

4 that further study is required to determine whether sharing between active spaceborne sensors and the radiolocation service is feasible in the 430-440 MHz band.

5 that further study is required to determine any potential of interference between active spaceborne sensors and the amateur-service (primary in Region 1 and secondary in Regions 2 and 3), including the amateur-satellite service, in the band 430-440 MHz, in order to develop appropriate technical and operational measures for their coexistence.
