

RECOMMENDATION ITU-R SA.1024-1

**NECESSARY BANDWIDTHS AND PREFERRED FREQUENCY BANDS FOR
DATA TRANSMISSION FROM EARTH EXPLORATION SATELLITES
(NOT INCLUDING METEOROLOGICAL SATELLITES)**

(Question ITU-R 139/7)

(1994-1997)

The ITU Radiocommunication Assembly,

considering

- a) that sensors on Earth exploration satellites, currently operating or under development, produce data rates ranging from 2 kbit/s up to 1 Gbit/s;
- b) that, although on-board data compression techniques could allow a reduction of symbol rates, it may be necessary to use error correcting coding techniques to achieve the performance objectives thus resulting in increased bandwidths;
- c) that several frequency bands are allocated to the Earth exploration-satellite (EES) service (space-to-Earth) and to the inter-satellite service for use by the EES service;
- d) that the band 2 200-2 290 MHz is extensively utilized by space and terrestrial services;
- e) that transmission through the Earth's atmosphere at frequencies above around 10 GHz is affected by rain;
- f) that additional EES systems requiring space-to-Earth data links are planned, some of which will transmit higher resolution images, requiring high data rates resulting in bandwidths greater than can be accommodated in the 8 025-8 400 MHz band;
- g) that certain future EES systems will require both space-to-space links to data relay satellites and space-to-Earth data links near 26 GHz,

recommends

- 1** that Earth exploration-satellite space-to-Earth and space-to-space links requiring low data rates use assignments in the allocated bands below 2 300 MHz;
 - 2** that Earth exploration-satellite space-to-Earth links requiring medium and high data rates use assignments in the 8 025-8 400 MHz band;
 - 3** that Earth exploration-satellite space-to-space links requiring high data rates use assignments in the 25.25-27.5 GHz band;
 - 4** that Earth exploration-satellite space-to-Earth links requiring high data rates but with a possible reduction of transmission performance in case of rain use assignments in frequency bands above 25 GHz that are allocated to the Earth exploration-satellite service;
 - 5** that EES systems requiring wide bandwidth data relay satellite links as well as wide bandwidth direct-to-Earth links use assignments near 26 GHz.
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