



**Provisional Recommendation SFCG 39-2**

**LIMITATIONS ON EARTH-SPACE LINK POWER LEVELS IN THE  
EESS 7190-7250 MHz BAND**

The SFCG,

CONSIDERING

- a) that occupation of frequency bands used by space agencies is increasing rapidly;
- b) that in many cases the same frequency will be shared by several systems;
- c) that the 7190-7250 MHz band is allocated to EESS (E-s) for TT&C operation of the spacecraft;
- d) that the 7190-7235 MHz band is allocated to other space services;
- e) that excessive EIRP from earth stations will make intra- and inter-service frequency sharing increasingly difficult and result in an inefficient use of the radio frequency spectrum;
- f) that excessive EIRP from earth stations likewise unnecessarily complicates the coordination with terrestrial services and may increase in some cases the coordination area;
- g) that the required EIRP from an earth station is determined by  $P/N_o$ ,  $E_s/N_o$ , and the minimum signal level required by the spacecraft receiver;

RECOMMENDS

1. that space agencies limit the EIRP on Earth-to-space links to that required for safe spacecraft operation, by means of one or more of the following:
  - avoid using high power transmitters having a fixed output, but instead adjust the transmitted power to the minimum needed to meet project requirements;

- obtain the required EIRP by using an appropriate antenna diameter in order to reduce both sidelobe radiation and transmitter power. As a guideline, the antenna diameter should be equal to or greater than 7.3m;
  - the antenna diameter may be as small as 5.0m for systems requiring transmitter power equal or lower than: a) 20W (referenced at the antenna port) or; b) 100W for LEOP and emergency operations only.
2. that transmit antennas comply with the patterns of Rec. ITU-R S.465.
  3. that spacecraft equipment designers endeavour to provide similar margins with regard to minimum  $P/N_0$ , minimum  $E/N_0$  and the minimum signal required by the spacecraft