QUESTION ITU-R 42-1/4

Characteristics of antennas at earth stations  
in the fixed-satellite service

(1990-1993)

The ITU Radiocommunication Assembly,

considering

*a)* that the radiation fields close to antennas will affect the level of coupling between earth‑station antennas in the fixed-satellite service (FSS) and nearby antennas using the same frequency bands;

*b)* that the radiation fields of antennas may also be affected by the use of pit shielding;

*c)* that earth-station antennas with more than one beam are feasible, and that the use of such antennas may be preferable to employing several single-beam antennas at an earth station;

*d)* that frequency re-use might be achieved with orthogonally polarized signals;

*e)* that the precision of satellite station-keeping and attitude control may improve as a result of the development of more advanced control techniques in the satellite sub-systems;

*f)* that at higher frequency bands (i.e. 20-30 GHz) phased array antennas are also likely to be used,

decides that the following Questions should be studied

1 What is the relationship between near and far field patterns of earth stations in the FSS and other stations using the same frequency bands?

2 What is the coupling between antennas close to one another?

3 What is the effectiveness of pits or other devices for providing shieldings?

4 What are the radiation characteristics of each beam of multi-beam antennas?

5 What are the limitations on the number of beams that can be generated by a single antenna, and what is the minimum achievable angular separation between the beams?

6 What is the polarization discrimination performance of antenna systems in all angular regions with particular regard to the antenna type?

7 What are the desirable limits of steerability of earth-station antennas for geostationary satellites?

8 What are the radiation characteristics of phased array antennas?

further decides

1that the results of the above studies should be included in appropriate Recommendations and/or Reports;

2 that the above studies should be completed by 2025.

NOTE – See Recommendation ITU-R S.736.

Category: S1