

QUESTION ITU-R 21/6

Characteristics of receiving systems in the broadcasting-satellite service (sound and television)

(1993-2002)

The ITU Radiocommunication Assembly,

considering

- a) the frequency allocations made to the broadcasting-satellite service (BSS) by the World Administrative Radio Conference (Geneva, 1979) (WARC-79) in the 42 and 84 GHz bands, the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Málaga-Torremolinos, 1992) (WARC-92) in the 17 and 21 GHz bands as well as in the 1.5, 2.3 and 2.6 GHz band, and the frequency allocation modification to the broadcasting-satellite service (BSS) from the 84 GHz band to the 74 GHz band by the World Radiocommunication Conference (Istanbul, 2000) (WRC-2000);
- b) that the characteristics of the ground receiving systems affect the capacity of both the orbit and the spectrum;
- c) that the choice of frequency bands to be used and the emission standards are of great importance in deciding the following characteristics of the receiving equipment:
 - figure-of-merit, G/T ;
 - antenna gain pattern;
 - channel bandwidth;
 - reliability;
 - ease of control;
 - cost;
- d) that broadcasting services are provided, in the various BSS bands, in integrated form of various kinds of content with various bit-rates such as HDTV, SDTV, sound and data;
- e) that interactive and on-demand services and the services assuming storage device in the receiver are going to be implemented;
- f) that, in order to cope with the substantial rain attenuation at 17 GHz and above, the modulation system(s) may be complex (hierarchical, multi-level, RF time-multiplex, etc.) and have various levels of channel coding;
- g) that particular attention should be given to the receiver design, channel grouping and sharing criteria and their considerable influence on the implementation of Plans for the BSS;
- h) that the equipment used for community reception and individual reception may differ substantially in technical performance and cost;
- j) that some developing countries may be especially interested in the study of community reception;

- k) that the desired quality of reception and consequent system design parameters and standards for community reception of signals from broadcasting satellites are expected to be appreciably different from those for individual reception;
- l) that the possible use of new colour television systems, offering high-quality video and audio signals and also data channels, will require suitable reception techniques;
- m) that it may be desirable for the receiver to operate with more than one such system,

decides that the following Question should be studied

1 What are the most suitable reception techniques to be used, taking into account the possible use of existing television receivers, both for individual and community reception?

2 What are the optimum characteristics of broadcasting-satellite systems (sound and television) for community and individual reception to provide economical coverage of the areas to be served within one country or a group of countries, taking into account the reception techniques identified in § 1?

3 What are the emission standards for the various BSS bands under consideration here which would ensure the desired service at the lowest cost?

4 What are the power flux-densities required for community and individual reception with a view to specifying numerical values which will distinguish between these types of reception?

5 What are the optimum characteristics of receiving equipment, for individual and for community reception, in the frequency bands under consideration here allocated to the BSS, taking into account:

- the different modulation techniques for transmitting the vision and sound signals;
- the need for sharing frequency bands and orbital arc with other satellite systems;
- the cost of the equipment and its technical performance?

6 What is the interdependence of receiver design, channel grouping and sharing criteria, together with the effects of these factors on the operation of the BSS?

7 What measurement method should be used to determine the figure-of-merit of receiving systems, especially those intended for individual reception?

NOTE 1 – The studies on reception techniques should pay particular attention to parameters that may affect interference to or from other services.

NOTE 2 – See Reports ITU-R BO.473, ITU-R BO.632, ITU-R BO.810 and ITU-R BO.1075 and Recommendations ITU-R BO.652, ITU-R BO.790, ITU-R BO.1130, ITU-R BO.1408 and ITU-R BO.1516 and the ITU-R DSB Handbook “Terrestrial and satellite digital sound broadcasting to vehicular, portable and fixed receivers in the VHF/UHF bands” Geneva, 2002,

further decides

1 that studies in response to this Question should focus on receivers using digital techniques for audio-broadcasting and HDTV with the objective of revising pertinent Recommendations, e.g. Recommendation ITU-R BO.790;

2 that the above studies should be completed by 2006.