EUROPEAN RADIOCOMMUNICATIONS COMMITTEE

ERC Decision
of 19 October 2000
on the shared use of the band 17.7 - 19.7 GHz
by the fixed service and Earth stations
of the fixed-satellite service
(space-to-Earth)

(ERC/DEC/(00)07)

EUROPEAN CONFERENCE OF POSTAL AND TELECOMMUNICATIONS ADMINISTRATIONS

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ERC Decision addresses the use of the band 17.7 - 19.7 GHz by the fixed and fixed-satellite service in relation to the requirements and priorities of CEPT administrations.

2 BACKGROUND

The band covered by this ERC Decision is allocated to the fixed and fixed-satellite service (space-to-Earth) on a primary basis in the Radio Regulations.

The fixed service (FS) is a key medium for delivering telecommunication services with a rapid and local deployment. In particular, the increasing demand for the provision of infrastructure for public mobile systems and for wireless local loop applications results in the deployment of large numbers of FS stations in this and other bands.

The band 17.7 - 19.7 GHz is already significantly used by the fixed service within CEPT, and its development will increase in the future. The ERO report on "Fixed service trends post-1998" foresees up to 17 000 links by the year 2003. In addition the UMTS forum foresees the need for very large numbers of links in several bands to support UMTS.

Satellite systems are also a key medium for delivery of future telecommunication services enabling broadband communication to rapidly be established over wide areas. Recent proposals for new GSO and NGSO systems in the fixed-satellite service (FSS) indicate that large numbers of user terminals are intended to be deployed on an uncoordinated basis for direct customer access in some frequency bands.

In order to enable coexistence between the fixed service and the fixed-satellite service without imposing undue constraints on either of the services, the approach of ‘sharing’ should be applied when possible. In view of an ever increasing number of radio systems world-wide and that the electromagnetic spectrum is a limited and valuable resource, efficient use of the spectrum is more necessary than ever before.

Until recently, the sharing between the FS and the FSS was not a problem because satellite earth stations were few in number and could be co-ordinated easily with the radio relay systems being operated in the same frequency bands. With the advent of the mass application of FSS systems, the situation has changed.

Compatibility studies carried out by the ERC have shown that the risk of interference between FS and FSS terminals in low populated areas is low. The risk of interference increases in densely populated areas, and the sharing can be difficult in some hot spot areas. In that case, the implementation of mitigation techniques improves the sharing situation and reduces the potential of interference. Concerning the implementation of Dynamic Channel Allocation in FSS systems, the ERC has extensively studied its efficiency and feasibility. Considering the state of the art of satellite technology, some FSS systems might have some difficulties to implement this technique.

3 REQUIREMENT FOR AN ERC DECISION

In order to provide a clear regulatory framework for future investment and deployment of fixed and fixed satellite systems, and to facilitate the use of transportable and uncoordinated FSS terminals, an ERC Decision setting out the regulatory framework for the use of FS and FSS terminals is necessary for the band 17.7 - 19.7 GHz.

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"The European Conference of Postal and Telecommunications Administrations,

considering

a) that the band 17.7 - 19.7 GHz is allocated to both the fixed service and the fixed-satellite service (space-to-Earth), as well as the mobile service on a primary basis in the Radio Regulations;

b) that a significant number of fixed service systems have already been deployed within CEPT in this band in accordance with RF channel frequency arrangements detailed in ERC Recommendation 12-03;

c) that the future expansion of the fixed service in this band is of vital importance to provide Europe's telecommunication infrastructure, particularly in relation to the mobile infrastructure network (e.g. UMTS/IMT-2000, GSM and GSM 1800);

d) that the introduction of future FSS systems will enhance and enable broadband communications over wide areas in CEPT, including areas where terrestrial means are not feasible or available;

e) that a number of GSO/NGSO FSS systems are currently being planned to operate in this band, and that some of them intend to deploy large numbers of user terminals on an uncoordinated basis in some parts of the band;

f) that some FSS systems intend to deploy a small number of large antenna Earth Stations on a coordinated basis;

g) that the probability of interference to FSS uncoordinated earth stations by FS stations is generally low and can be further decreased with appropriate mitigation techniques for FS and FSS;

h) that this probability can increase in hot spot areas such as large conurbations;

i) that the implementation of some mitigation techniques might not be possible in some cases;

j) that the efficiency of mitigation techniques could vary according to the development of both services;

k) that FS/FSS band segmentation is not appropriate in this band within CEPT administrations due to the extensive deployment of existing terrestrial services and the desire to utilise the spectrum to maximum efficiency by promoting the use of frequency sharing techniques;

noting

1. that the band 19.7 - 20.2 GHz is exclusively allocated to FSS and MSS, and is therefore recommended for the use of uncoordinated Earth stations;

2. that this portion of spectrum might not be sufficient to satisfy all the demand from FSS GSO and NGSO systems;

DECIDES

1. that Earth stations in the fixed-satellite service (space-to-Earth), which are not coordinated through a national frequency assignment process, shall not claim protection from stations of the fixed service;

2. that in order to decrease the probability of interference to uncoordinated FSS Earth stations, the FS shall, where practical, implement the mitigation techniques according to Annex I;

3. that in order to avoid the interference from FS stations, uncoordinated Earth stations in the FSS shall implement, when practical, the mitigation techniques described in Annex II;

4. that this Decision shall enter into force on 19.10.00;

5. that CEPT Administrations shall communicate the national measures implementing this Decision to the ERC Chairman and the ERO when the Decision is nationally implemented."

Note:
Please check the ERO web site (www.ero.dk) under "Documentation / Implementation" for the up to date position on the implementation of this and other ERC Decisions.

ANNEX I

List of mitigation techniques for stations in the FS

a) Automatic Transmitter Power Control: to be applied in the whole band, to all new equipment installed after the 1st January 2003[1].

b) EIRP limited to the minimum necessary to fulfil the performance objectives of the fixed link.

c) Antennas: Use of high performance (low sidelobe) antennas in areas of dense FS deployment.

ANNEX II

List of mitigation techniques for uncoordinated FSS earth stations

a) Dynamic Channel Assignment (DCA): dynamic selection by the FSS system of the non interfered channels, when available. For those FSS systems, which can and have implemented DCA, a reasonable amount of locally available spectrum for the FSS earth stations could improve the DCA efficiency.

b) Site shielding: this technique can, where there is the freedom of installation, be very effective, particularly for GSO systems, since careful positioning of the FSS Earth station receive antenna can typically give 10-40dB of additional protection.

c) Antenna Performance: the Earth stations should use antennas designed to achieve low sidelobe radiation performance in areas of dense FS deployment.

d) Minimum operational elevation angle of 40 degrees for the non-GSO FSS terminals.

[1] This date is subject to review in light of market development of FS and FSS in this band