



ERC Decision (00)07

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)

Approved 19 October 2000

Amended: 04 March 2016

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 results in the deployment of large numbers of FS stations in this and other bands.

The band 17.7 - 19.7 GHz is significantly used by the fixed service within CEPT. The ECC Report 173 on "Fixed Service in Europe - Current use and future trends post 2011" indicates that about 90,000 links are deployed in this band, with significant usage increase expectations although a moderate situation of congestion is already reported. The major utilisation is for high capacity links for fixed and mobile infrastructure.

Satellite systems are also a key medium for delivery of telecommunication services enabling broadband communication to rapidly and cost-effectively be established over wide areas. GSO and NGSO systems in the fixed-satellite service (FSS) in the Ka-band are already in operation, and a number of satellites are in construction. A large numbers of user terminals are intended to be deployed on an uncoordinated basis for direct customer access in this frequency band. ECC Report 152 provides information on the current and planned use of the Ka-band by FSS systems.

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 ECC 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 more difficult in some hot spot areas, although locally a significant amount of spectrum remains usable for FSS signal reception. In that case, the implementation of mitigation techniques improves the sharing situation and reduces the potential of interference. The awareness of the interference environment experienced by individual FSS receive earth stations allows to implement Dynamic Channel Allocation techniques, whose efficiency and feasibility have extensively been studied by CEPT. Interference awareness can be based on processing of information from national Fixed Service assignment databases, and from energy detection by individual terminals. The information of FS assignment facilitates the FSS system planning and spectrum resource allocation to uncoordinated FSS receive earth stations.

Fixed service links in many CEPT administrations implement the band plan of ERC/REC 12-03, and a frequency gap exists (called the duplex gap) between the paired set of FS channels of the upper and lower portions of the 17.7-19.7 GHz band. This gap generally of a few tenth of MHz may provide an additional opportunity for uncoordinated FSS receive earth stations to operate under better interference conditions.

3 REQUIREMENT FOR AN ECC 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.

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) AMENDED 4 MARCH 2016

“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. IMT, 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 deployed 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;
- l) that some administrations currently maintain Fixed links assignment databases from which information on spectrum availability for FSS reception can be computed;
- m) that some administrations may not be in a position to make available Fixed links assignment information;
- n) that in the future software solution may be implemented by administrations which facilitates the detection of spectrum locally available for FSS uncoordinated receive earth stations (see section 3.4.3 of ECC Report 241);
- o) that some administrations may not be in a position to implement such software solution, inter alia, due to security regulations of individual administrations;
- p) that some administrations have not assigned and do not plan to assign Fixed links within the Fixed Service channelling plan duplex-gap as defined in ERC Recommendation 12-03, and that this duplex gap could provide some additional interference free spectrum for use by uncoordinated FSS earth

stations;

- q) that using Permanent/Continuous Dynamic Channel Assignment (DCA) mechanism as a mitigation technique will increase the ability for uncoordinated FSS earth stations once deployed to cope with new additional fixed stations;
- r) 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;
- s) that the band 17.3-17.7 GHz is available for HDFSS in CEPT, in accordance with ECC Decision(05)08;
- t) that these portions of spectrum are not sufficient to satisfy all the demand from FSS GSO and NGSO systems;
- u) that in EU/EFTA countries the radio equipment that is under the scope of this Decision shall comply with the R&TTE Directive. Conformity with the essential requirements of the R&TTE Directive may be demonstrated by compliance with the applicable harmonised European standard(s) or by using the other conformity assessment procedures set out in the R&TTE Directive,

DECIDES

1. that CEPT **administrations shall** enable the deployment of FS stations, coordinated FSS (space-to-Earth) earth stations and uncoordinated FSS (space-to-Earth) earth stations in the band 17.7-19.7 GHz;
2. that CEPT **administrations shall** exempt uncoordinated FSS earth stations (space-to-Earth) in the band identified in decides 1 from individual licensing and allow their free circulation and use;
3. that uncoordinated FSS earth stations in the band identified in decides 1 shall not claim protection from stations of the fixed service;
4. that in order to decrease the probability of interference to uncoordinated FSS earth stations, the FS shall, where practical, implement one or more of the mitigation techniques according to Annex 1;
5. that in order to avoid the interference from FS stations, FSS systems which include uncoordinated FSS earth stations shall implement, where practical, one or more of the mitigation techniques described in Annex 2;
6. that in order to mitigate the interference from FS stations to uncoordinated earth stations in the FSS, CEPT administrations are recommended to make available FS assignments information in accordance with Annex 3;
7. that the availability of FS information as per decides 6 will be monitored by the Office to help administrations to identify if there is any need for a solution as described in considering n);
8. that CEPT **administrations shall** inform the Office, through the ECO Frequency Information System (EFIS), whether frequencies within the FS duplex gap¹ around 18.7 GHz as defined in ERC/REC 12-03 are unused by FS, and in such case provide the Office with the boundaries of such gap in their countries;
9. that this Decision **enters into force** on 4 March 2016;
10. that the preferred **date for implementation** of this Decision shall be 5 September 2016;
11. that CEPT **administrations shall** communicate the national measures implementing this Decision to the ECC Chairman and to the Office when this ERC Decision is nationally implemented.”

Note:

Please check the Office documentation database <http://www.ecodocdb.dk> for the up to date position on the implementation of this and other ECC Decisions.

¹ For the purpose of this decision, the duplex gap is defined as the frequency band comprised between the upper edge of the upper FS channel of the lower half of the 17.7-19.7 GHz band, and the lower edge of the lower FS channel of the upper half of the 17.7-19.7 GHz band. See Annex A of ERC/REC 12-03.

ANNEX 1: LIST OF MITIGATION TECHNIQUES FOR STATIONS IN THE FS

- a) Automatic Transmitter Power Control;
- b) e.i.r.p. 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 2: LIST OF MITIGATION TECHNIQUES FOR FSS SYSTEMS WHICH INCLUDE UNCOORDINATED FSS EARTH STATIONS

- a) Permanent/Continuous Dynamic Channel Assignment (DCA): dynamic selection by the FSS system of non-interfered channels (see ECC Report 241);
- b) Use of FS assignment information made available by administrations for interference assessment;
- c) 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;
- d) Antenna Performance: the earth stations should use receive antennas designed to achieve low sidelobe gain in areas of dense FS deployment.

ANNEX 3: PROCESS TO BE IMPLEMENTED BY ADMINISTRATIONS FOR MAKING AVAILABLE INFORMATION ON FS ASSIGNMENTS:

CEPT administrations willing to make available FS assignments information shall communicate to the ECO the means (e.g. hyperlink to the relevant webpage) by which the following information can be retrieved from. The desirable FS parameters are:

- a) Longitude and latitude of FS station
- b) Geographical coordinate system (e.g. WGS84)
- c) Azimuth
- d) Antenna size/Maximum gain
- e) Transmitter antenna height above ground
- f) Transmitter antenna elevation angle
- g) Assigned bandwidth
- h) Assigned centre frequency
- i) Assigned power at antenna port
- j) Reference antenna pattern (e.g. ITU-R Recommendation)

Note: the provision of such information in a file in a tabular form is preferable.

The information made available should be provided and updated by administrations on a best-effort basis. Administrations are not responsible for the accuracy of the information.