



ERC Decision (00)02

Use of the band 37.5-39.5 GHz by the fixed service and by earth stations of the fixed-satellite service (space-to-Earth) and use of the band 39.5-40.5 GHz by earth stations of the fixed-satellite service and the mobile-satellite service (space-to-Earth)

approved 27 March 2000

amended 4 March 2022

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ERC Decision addresses the use of the band 37.5-39.5 GHz by the fixed service (FS) and earth stations of the fixed-satellite service (FSS) (space-to-Earth); and the use of the band 39.5-40.5 GHz by earth stations of the FSS and the mobile-satellite service (MSS) (space-to-Earth) in relation to the requirements and priorities of CEPT administrations.

2 BACKGROUND

The band 37.5-40.5 GHz is allocated to the FS and FSS (space-to-Earth) on a primary basis in the Radio Regulations [2]. The band 39.5-40.5 GHz is allocated to the MSS (space-to-Earth).

The FS is a key medium for delivering inexpensive 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.

The band 37.5-39.5 GHz is already heavily used by the FS in CEPT countries, and its development will increase in the future. ECC Report 173 (version of 27 April 2018) [1] indicates that as of 2016, there were 132,182 point-point links declared and that administrations have indicated that, in their country, point to multipoint use in that band is not allowed.

The band 39.5-40.5 GHz is not used by the FS in CEPT countries, and thus offers a good opportunity for the deployment of a high number of uncoordinated FSS and MSS earth stations.

Satellite systems are also a key medium for delivery of future telecommunication services enabling communication to rapidly be established over wide areas. Recent proposals for new GSO and NGSO systems in the 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 within 37.5-40.5 GHz, including the band 39.5-40.5 GHz. This band is also considered for the deployment of mobile earth stations, for example on ship and aircraft as an extension to the use of Ka-Band and Ku-Band spectrum for ESIMs. FSS gateway stations operating in the space-to-Earth direction are expected to utilise the whole 37.5-42.5 GHz range, for example to provide feeder links for satellite services using other frequency bands. Such gateway stations can be coordinated with FS stations like the case today in some parts of the 28 GHz band.

In order to enable coexistence between the FS and the FSS without imposing undue constraints on either of the services the approach of 'sharing' should be applied when possible. Considering the ever increasing number of radio systems world-wide and considering that the electromagnetic spectrum is a limited and valuable resource, sharing is more necessary than ever before.

Sharing between the FS and the FSS is feasible in many bands, where satellite earth stations are few in number and can be co-ordinated easily with the radio relay systems operating in the same frequency bands. With the use of certain frequency bands for mass application of FSS and MSS systems, the situation for those bands has changed.

3 REQUIREMENT FOR AN ERC DECISION

In order to provide a clear regulatory framework for future investment and deployment of fixed, fixed-satellite and mobile-satellite systems, and to facilitate the use of transportable and uncoordinated satellite terminals, an ERC Decision setting out the priorities and regulatory framework for the use of FS and satellite terminals is necessary for the frequency range 37.5-40.5 GHz.

ERC DECISION OF 27 MARCH 2000 ON THE USE OF THE BAND 37.5-39.5 GHz BY THE FIXED SERVICE AND BY EARTH STATIONS OF THE FIXED-SATELLITE SERVICE (SPACE-TO-EARTH); AND USE OF THE BAND 39.5-40.5 GHz BY EARTH STATIONS OF THE FIXED-SATELLITE SERVICE AND THE MOBILE-SATELLITE SERVICE (SPACE-TO-EARTH) (ERC/DEC/(00)02), AMENDED 4 MARCH 2022

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that the band 37.5-40.5 GHz is allocated, among other services, to both the FS and the FSS (space-to-Earth) on a primary basis in the Radio Regulations [2];
- b) that the band 39.5-40.5 GHz is allocated, among other services, to the MSS (space-to-Earth) on a primary basis in the Radio Regulations;
- c) that the frequency bands 39.5-40 GHz (space-to-Earth) in Region 1, and 40-40.5 GHz (space-to-Earth) in all Regions are identified for use by high-density applications in the FSS in accordance with RR No. 5.516B;
- d) that a large number of FS systems have already been deployed in CEPT countries in the band 37 - 39.5 GHz in line with the RF channel frequency plan in CEPT Recommendation T/R 12-01 [3];
- e) that the band 39.5-40.5 GHz is not used by the FS;
- f) that the future expansion of the FS in the bands 37.5-39.5 GHz is of vital importance to provide Europe’s telecommunication infrastructure, particularly in relation to the mobile infrastructure network (e.g. 4G/5G);
- g) that a number of GSO/NGSO FSS and MSS systems intending to operate in this frequency range have been published in the ITU-R, and that some of them intend to deploy large numbers of user terminals that would typically be exempt from individual licensing and hence would be used on an uncoordinated basis;
- h) that some FSS systems also intend to deploy earth stations on a coordinated basis in the band 37.5-40.5 GHz;
- i) that harmonised standards for uncoordinated FSS and MSS earth station operating in the band 39.5-40.5 GHz are expected to be developed, including parameters to ensure that MSS earth stations are compatible with FSS operations in the band;
- j) that an ECC Recommendation is under development to provide guidance on how to prevent and/or to resolve interference cases to FSS earth stations caused by MFCN above 40.5 GHz;
- k) that CEPT administrations should rapidly report on cases of interference to FSS earth stations caused by MFCN above 40.5 GHz and their resolution to the Office;
- l) that the probability of interference to FSS uncoordinated earth stations by FS stations is generally low within 37.5-39.5 GHz and can be further decreased with appropriate mitigation techniques for FS and FSS;
- m) that this probability can increase in hot spot areas such as large conurbations;
- n) that CEPT administrations may need to develop national processes to allow for the coordination of point-to-point fixed links and coordinated FSS earth stations in the band 37.5-39.5 GHz (see Annex 1 for guidance);
- o) that a questionnaire to CEPT administrations on deployment of FSS earth stations in the band 39.5-40.5 GHz should be carried out on a regular basis;

DECIDES

1. to designate the band 37.5-39.5 GHz for the use of point-to-point fixed links and for the use of coordinated and uncoordinated FSS earth stations;

2. to designate the band 39.5-40.5 GHz for the use of coordinated and uncoordinated FSS earth stations and for the use of uncoordinated MSS earth stations;
3. that in the band 37.5-39.5 GHz, uncoordinated FSS earth stations shall not claim protection from stations of the FS;
4. that CEPT administrations shall not deploy stations in the FS in the band 39.5-40.5 GHz;
5. that this Decision shall enter into force on 04 March 2022;
6. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when the Decision is nationally implemented.

Note:

Please check the Office documentation database <https://docdb.cept.org> for the up to date position on the implementation of this and other ECC Decisions.

ANNEX 1: GUIDANCE ON COORDINATION BETWEEN FS STATIONS AND FSS EARTH STATIONS IN THE BAND 37.5-39.5 GHz

The band 37.5-39.5 GHz is used by point-to-point fixed links and by receiving FSS earth stations. Some geographic separation between FS transmitters and earth stations is necessary to avoid interference when the FS station and FSS earth station operate on the same frequencies. Some geographic separation may also be needed when the stations operate on adjacent frequencies, although the distances will be much shorter.

Fixed links typically need to be coordinated with one another, to ensure that one fixed link's transmitter does not cause interference to another link's receiver. Regulators or operators therefore likely have tools available to manage such coordination and it may be possible to adapt such tools to include receiving earth stations in place of a FS receiver, as the same basic principles apply.

Regarding potential cross-border interference, administrations may establish arrangements with neighbouring countries and the ITU process for coordination can be used to establish the necessary coordination area for a proposed earth station and hence to establish the countries with which coordination would be required. Appendix 7 of the Radio Regulations describes the methodology to establish coordination areas for cross-border coordination, with the applicable parameter values for the earth station and terrestrial stations for the band 37.5-39.5 GHz contained in Table 8d. The assumptions for the parameters values and the propagation model in Appendix 7 are generally cautious, meaning that FS stations located in the coordination area may be able to operate, subject to more detailed analysis. Recommendation ITU-R SF.1006 [4] provides a methodology that may be used to assist administrations in the more detailed interference assessment. This more detailed assessment should take account of the actual characteristics of the FS station and earth station, and the specific terrain and any clutter loss should be taken into account in the propagation model (for example see Recommendation ITU-R P.452 [5]). A more detailed interference assessment may show that FS station located in the coordination area are able to operate without harmful interference to FSS earth stations.

A similar approach may be taken by administrations for coordination of FS stations with respect to earth stations in the same country. In this case, the approach described in Recommendation ITU-R SF.1006 may also be used, but similarly to the case for cross-border coordination, the actual station parameters should be used and specific terrain data should be used, to provide the most accurate analysis.

One consequence of this approach to coordination is that information on the fixed links must be available, including the location of transmitters and certain characteristics such as e.i.r.p., antenna radiation pattern, antenna height above ground, antenna azimuth and elevation angle. Similarly for the earth station, the location of the station, its antenna characteristics (radiation pattern, azimuth and elevation angle) and receiver noise temperature are required.

For the purpose of being able to identify potential locations for new FSS earth stations, it is necessary for an earth station operator to have knowledge of the location of point-to-point fixed links located in the same country, and sometimes in neighbouring countries. Such information could be provided, for example, through the availability of the FS station information on the administration website.

ANNEX 2: LIST OF REFERENCES

- [1] [ECC Report 173](#): “Fixed Service in Europe Current use and future trends post 2016”, approved 2012 and amended 27 April 2018
- [2] ITU Radio Regulations, Edition of 2020
- [3] [CEPT Recommendation T/R 12-01](#): “Recommendation T/R of 1991 on preferred channel arrangements for fixed service systems operating in the frequency band 37.0-39.5 GHz, approved 1991, revised on 5 February 2010 and amended on 29 May 2019
- [4] Recommendation ITU-R SF.1006: “Determination of the interference potential between earth stations of the fixed-satellite service and stations in the fixed service”
- [5] Recommendation ITU-R P.452: “Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz”