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EUROPEAN RADIOCOMMUNICATIONS COMMITTEE

ERC Decision
of 19 October 2000
on the use of the band 27.5 - 29.5 GHz
by the fixed service
and uncoordinated Earth stations
of the fixed-satellite service (Earth-to-space)
(ERC/DEC/(00)09)



Archive only: This Decision is withdrawn and replaced by ECC/DEC/(05)01

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ERC Decision addresses the use of the band 27.5 - 29.5 GHz by the fixed (FS) and fixed-satellite service (FSS) in relation to the requirements and priorities of CEPT administrations.

2 BACKGROUND

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

ERC Recommendation 13-04 identifies the band 27.5 - 29.5 GHz as a preferred band for Fixed Wireless Access (FWA), taking into account sharing requirements with other services. The Recommendation also notes that CEPT has still to take a final decision on the sharing conditions within this band, and that in the meantime, CEPT Administrations should not take any final decisions on its utilisation. Some CEPT administrations have already assigned frequencies for FWA systems in this band.

ERC Recommendation T/R 13-02 also defines a channel arrangement for the FS in the band 27.5 - 29.5 GHz, and both standards and equipment have already been developed according to this ERC Recommendation.

The fixed service is a key medium for delivering telecommunication services with a rapid and local deployment. In particular, the increasing demand for the provision of wireless local loop applications and for mobile network infrastructure (e.g. UMTS/IMT-2000) will result in the deployment of large numbers of FS stations in this and other bands.

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 a basis for direct customer access in some frequency bands. Some CEPT countries have already filed FSS systems in this band.

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 and FS systems, the situation has changed.

Compatibility studies carried out by the ERC have shown that the risk of interference between FS and FSS terminals is regarded to be unacceptable in the same densely populated geographical area, even with the implementation of mitigation techniques.

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 27.5 - 29.5 GHz.

Due also to the fact that competition in the local loop is stimulated by FWA, an ERC Decision on how to implement this technology in the 28 GHz band is strongly needed.

This ERC Decision identifies priority bands for FS and uncoordinated FSS Earth stations, taking into account the existing channel arrangement for the FS as detailed in CEPT Recommendation T/R 13-02. However, coordinated FSS Earth stations can still use the whole band 27.5 - 29.5 GHz, as the coordination procedures make the sharing between FS and coordinated FSS earth stations feasible.

This ERC Decision also identifies frequency bands which can be made available to FS in some geographical areas, where the demand for FS infrastructure is the highest, and to FSS outside these areas. These geographical areas will be defined by each CEPT administration, depending on their local needs.

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**ERC Decision
of 19 October 2000**

**on the use of the band 27.5 - 29.5 GHz
by the fixed service and uncoordinated Earth stations of the fixed-satellite service (Earth-to-space)**

(ERC/DEC/(00)09)

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that the band 27.5 - 29.5 GHz is allocated to both the fixed service and the fixed-satellite service (Earth-to-space), as well as the mobile service on a primary basis in the Radio Regulations;
- b) that ERC Recommendation 13-04 identifies the band 27.5 - 29.5 GHz as a preferred band for Fixed Wireless Access, taking into account sharing requirements with other services, and noting that CEPT has still to take a final decision on the sharing conditions within this band;
- c) that ERC Recommendation T/R 13-02 defines a RF channel arrangement for the FS in the band 27.5 - 29.5 GHz, and both standards and equipment have already been developed according to this ERC Recommendation;
- d) that some CEPT administrations have already assigned frequencies for some FWA systems in this band;
- e) that the future expansion of the fixed service in this band is important to provide Europe's telecommunication infrastructure, particularly in relation to the Fixed Wireless Access in densely populated areas, as well as to support the future deployment of mobile systems (e.g. UMTS/IMT-2000);
- f) 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;
- g) 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;
- h) that some FSS systems intend to deploy a small number of large antenna Earth Stations on a coordinated basis;
- i) that the use of the band 28.6 - 29.1 GHz by FSS systems is subject to **RR S5.523A**;
- j) that the probability of interference to FS receiver stations by FSS uncoordinated transmitting Earth stations operating in the same geographical area is generally regarded as being not acceptable especially in densely populated areas, even when mitigation techniques are implemented;
- k) that a maximum EIRP density level of 6 dBW/MHz applied to each FS transmitter in the direction of the GSO arc would ensure that harmful interference is not caused to FSS space stations;
- l) that the use of transmit power reduction mechanisms (e.g. Automatic Power Control and/or Power Setting) by the FWA terminal stations will ensure that the maximum EIRP density level defined in considering k) will not be exceeded by a single station towards the GSO arc;
- m) that an adjacent band EIRP limitation is needed for the Earth stations in order to solve the FS/FSS adjacent band compatibility;
- n) that a guard band of 10 MHz between FS and FSS bands is necessary to ensure adequate protection from Earth stations in-band emission;

- o) that the band 29.5 - 30 GHz is exclusively allocated to FSS on a primary basis, and is therefore mainly intended for the use of uncoordinated Earth stations;
- p) that this portion of spectrum might not be sufficient to satisfy all the demand from FSS GSO and NGSO systems;
- q) that the coordination of FSS Earth stations can be sought in the whole band 27.5 - 29.5 GHz;

DECIDES

1. to designate the bands 27.5 - 27.8285 GHz, 28.4445 - 28.8365 GHz and 29.4525 - 29.5 GHz for the use of uncoordinated FSS Earth stations (see Annex for illustration);
2. to designate the bands 28.0525 - 28.4445 GHz and 29.0605 - 29.4525 GHz for the use of FS systems (see Annex for illustration);
3. that CEPT administrations shall not authorise the deployment of FS stations in the bands mentioned in Decide 1;
4. that CEPT administrations shall not authorise the deployment of uncoordinated FSS Earth stations in the bands mentioned in Decide 2;
5. that the bands 27.8285 - 28.0525 GHz and 28.8365 - 29.0605 GHz shall be used by FS systems and uncoordinated FSS Earth stations under the following conditions (see Annex for illustration):
 - in geographical areas individually designated by each CEPT administration for the use of FS systems, uncoordinated FSS Earth stations shall not operate;
 - outside these geographical areas, uncoordinated FSS earth stations can operate and FS stations can not claim protection;
 - in these bands, FSS operators shall be required to ensure that FSS systems are able to operate under the conditions above;
6. that CEPT Administrations make publicly available the information on the geographical areas referred to in Decide 5 as soon as possible ;
7. that new FWA terminal stations shall implement transmit power reduction mechanisms (e.g. Automatic Power Control and/or Power Setting) in the bands referred to in Decides 2 and 5;
8. that for uncoordinated FSS Earth stations operating in the bands referred to in Decides 1 and 5:
 - the off axis¹ EIRP density radiated in the adjacent bands used by the FS according to Decide 2 and 5 shall be limited to -35 dBW/MHz;
 - the elevation angle shall be higher than 10°;
9. that FSS systems using uncoordinated FSS earth stations in the bands referred to in Decide 1 and 5 shall implement Automatic Power Control in the uncoordinated FSS earth stations and/or automatic on-board satellite gain control;

¹ Off axis refers to angles greater than 7° from the axis of the main beam

10. that uncoordinated FSS Earth stations shall not have their occupied band edges closer than 10 MHz from the edges of the bands identified in Decide 2, and from the edges of the bands identified in Decide 5 when and where the FS has the priority;
11. that this ERC Decision shall be reviewed 2 years after its adoption in light of the development of FS and FSS systems in this frequency band;
12. that this Decision shall enter into force on 19.10.00;
13. 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.

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Annex

Band segmentation combined with geographical segmentation

48.5 MHz												32 FS channels of 28 MHz																112 MHz												32 FS channels of 28 MHz																47.5 MHz											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32				
FSS Exclusive (328.5)												FSS Exclusive (392 MHz)																FSS Exclusive (392 MHz)												FSS Exclusive (392 MHz)												(1)	TOTAL	768 MHz													
Conditional band FS/FSS (224 MHz)												Conditional band FS/FSS (224 MHz)																FS Exclusive (392 MHz)												FS Exclusive (392 MHz)														448 MHz													
FSS Exclusive												FS Exclusive																FSS Exclusive												FS Exclusive												(1)		784 MHz													
FSS Exclusive												FSS Priority and FS without protection				FS Exclusive								FSS Exclusive				FSS Priority and FS without protection				FS Exclusive				(1)																															
27.5 GHz												27.6285 GHz				28.0525 GHz								28.4445 GHz				28.8365 GHz				29.0605 GHz				29.4525 GHz				29.5 GHz																											
(1) FSS exclusive																																																																			
Note: coordinated FSS Earth stations have access to the whole band 27.5-29.5 GHz																																																																			