

ECC Decision (05)01

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)

Approved 18 March 2005

Amended 8 March 2019

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This ECC Decision addresses the use of the band 27.5-29.5 GHz by the Fixed Service (FS) and Fixed-Satellite Service (FSS) in relation to the requirements and priorities of CEPT administrations.

2 BACKGROUND

The band covered by this ECC Decision is allocated, among others, to the FS and FSS (Earth-to-space) on a primary basis in the Radio Regulations.

ECC/REC/(11)01 [1] 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. Some CEPT administrations have already assigned frequencies for FWA systems in this band. It should additionally be noted that, spectrum assignments can be done on a spectrum block and area basis or on an individual link by link basis.

ERC Recommendation T/R 13-02 [2] also defines a channel arrangement for the FS in the band 27.5-29.5 GHz, which is used by administrations for assignments to P-P and MP systems, and both standards and equipment have already been developed according to this ERC Recommendation.

The FS is a key medium for delivering telecommunication services with a rapid deployment. In particular, the increasing demand for the provision of wireless local loop applications and for mobile network infrastructure (e.g. UMTS/IMT) 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 FSS indicate that large numbers of user terminals are intended to be deployed on a basis for direct customer access in this frequency band. In particular, some European administrations are promoting GSO FSS systems in this band in the context of removing the “digital divide” taking into account that the 27.5-29.5 GHz frequency range is suitable for transmission by low-cost terminals in such systems and has the potential to make them economically and technologically viable, in complement to the satellite exclusive 29.5-30.0 GHz frequency range. Some CEPT countries have already filed FSS systems and launched satellites operating in this band.

WRC-03 identified a number of frequency bands for high-density applications in the fixed satellite service (HDFSS) through No. 5.516B. The bands 27.5-27.82 GHz in Region 1, 28.45-28.94 GHz in all Regions and 29.46-30 GHz in Region 1 are among the bands identified. This identification has made the concept of geographical band segmentation, associated with conditional bands as being no longer necessary. However, some administrations have already granted licences to FS operators in part or all of the former conditional bands making the frequency segmentation difficult to implement on their territories.

Compatibility studies carried out by the ERC and the ECC have shown that the interference between FS terminals and uncoordinated transmitting FSS terminals is regarded to be unacceptable on co-frequency basis in the same densely populated geographical area.

The electromagnetic compatibility between satellite terminals and aircraft avionics has been examined in ECC Report 272 on the “Earth Stations operating in the frequency bands 4-8 GHz, 12-18 GHz and 18-40 GHz in the vicinity of aircraft” [3]. This Report provides the maximum earth station e.i.r.p. levels to ensure compliance with aircraft High Intensity Radiated Field (HIRF) protection criteria.

Maximum e.i.r.p. levels for earth stations retained in this ECC Decision are equal to or lower than maximum e.i.r.p. based on ECC Report 272 that ensures compliance with aircraft HIRF protection criteria. Therefore, the maximum e.i.r.p. levels indicated in this ECC Decision implicitly provide the necessary protection for aircraft HIRF.

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, an ECC Decision is required to facilitate the free circulation and use of uncoordinated FSS earth stations and to take into account the decision taken by WRC-03 with regard to HDFSS.

This ECC Decision identifies 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 make use of the whole band 27.5-29.5 GHz, using established co-ordination procedures.

ECC DECISION OF 18 MARCH 2005, 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) (ECC/DEC/(05)01), AMENDED ON 8 MARCH 2019

“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 ECC Recommendation(11)01 [1] 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;
- c) that ERC Recommendation T/R 13-02 [2] 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 (or frequency blocks) for some FWA, P-P and MP systems in parts of this band;
- e) that the future expansion of the FS in this band is important to provide Europe’s telecommunication infrastructure, particularly in relation to the FWA in densely populated areas, as well as to support the future deployment of mobile systems (e.g. UMTS/IMT);
- f) that the use of the FS in the band 28.8365-28.9485 GHz within CEPT is limited to some countries, some of which have declared their intention not to continue the use of FS in the future in this band;
- g) 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;
- h) that a number of FSS systems are operating or 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;
- i) that the international coordination of FSS earth stations, in accordance with RR provisions, can be sought in the whole band 27.5-29.5 GHz;
- j) that some European administrations are promoting FSS systems in this band in the context of removing the “digital divide” at European level;
- k) that the 27.5-29.5 GHz frequency range is suitable for transmission by low-cost terminals and has the potential to make them economically and technologically viable, in complement to the satellite exclusive 29.5-30.0 GHz frequency range;
- l) that WRC-03 has identified a number of frequency bands for High-Density applications in the Fixed-Satellite Service (HDFSS) through No. 5.516B, among which are the bands 27.5-27.82 GHz in Region 1, 28.45-28.94 GHz in all Regions and 29.46-30 GHz in Region 1;
- m) that the probability of interference to FS receiver stations by FSS uncoordinated transmitting earth stations operating on the same frequency and in the same geographical area is generally regarded as being not acceptable especially in densely populated areas;
- n) that a maximum e.i.r.p. 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;
- o) 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 e.i.r.p. density level defined in considering n) will not be exceeded by a single station towards the GSO arc;

- p) that an adjacent band e.i.r.p. limitation is needed for the earth stations in order to ensure the FS/FSS adjacent band compatibility;
- q) that a guard band of 10 MHz between FS and FSS bands is necessary to ensure adequate protection from earth stations in-band emission;
- r) that the method of national co-ordination, of individual earth stations in the whole band, may need to take account of spectrum that is allocated on a spectrum block, area assigned basis, to fixed service operators (as referenced in ERC Report 99 [4], ERC Report 97 [5], ECC Report 32 [6] and ECC Recommendation (11)01 [1]);
- s) that when operating in national territory of a CEPT administration, relevant national regulatory requirements may apply to uncoordinated FSS earth stations;
- t) that the downlink bands identified by WRC-03 for HDFSS in Region 1 are subject to other ECC Decisions ECC Decision (05)08 [7];
- u) that in EU/EFTA countries the radio equipment that is under the scope of this Decision shall comply with the RE Directive [8]. Conformity with the essential requirements of the RE 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 RE Directive;
- v) that ECC Report 272 [3] provides the requirements established to ensure compliance with aircraft high intensity radiated field (HIRF) protection criteria.

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 stations¹;
2. to designate the band 28.8365-28.9485 GHz for the use of uncoordinated FSS earth stations, taking into account, until 1 January 2020, the legacy FS systems licensed in this band in some countries before 18 March 2005;
3. to designate the bands 27.8285-28.4445 GHz and 28.9485-29.4525 GHz for the use of FS systems¹;
4. that CEPT administrations shall not authorise the deployment of FS stations in the bands mentioned in Decides 1, nor authorise any new FS stations except in an already licensed network in the band specified in Decides 2;
5. that CEPT administrations shall not authorise the deployment of uncoordinated FSS earth stations in the bands mentioned in Decides 3;
6. that administrations shall exempt from individual licensing and allow the free circulation and use of uncoordinated FSS earth stations operating in the bands specified in Decides 1, and Decides 2 where appropriate;
7. that uncoordinated FSS earth stations transmitting within the band 27.5-29.5 GHz shall comply with the requirements in Annex 2;
8. 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 3;
9. that this Decision shall enter into force on 8 March 2013;
10. that the preferred date for implementation of this Decision shall be 8 September 2013;

¹ See Annex 1

11. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when the Decision is nationally implemented, including, if applicable, information with respect to their situation regarding Decides 2.”

Note:

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

ANNEX 1: BAND SEGMENTATION FOR FSS AND FS IN THE BAND 27.5-29.5 GHz

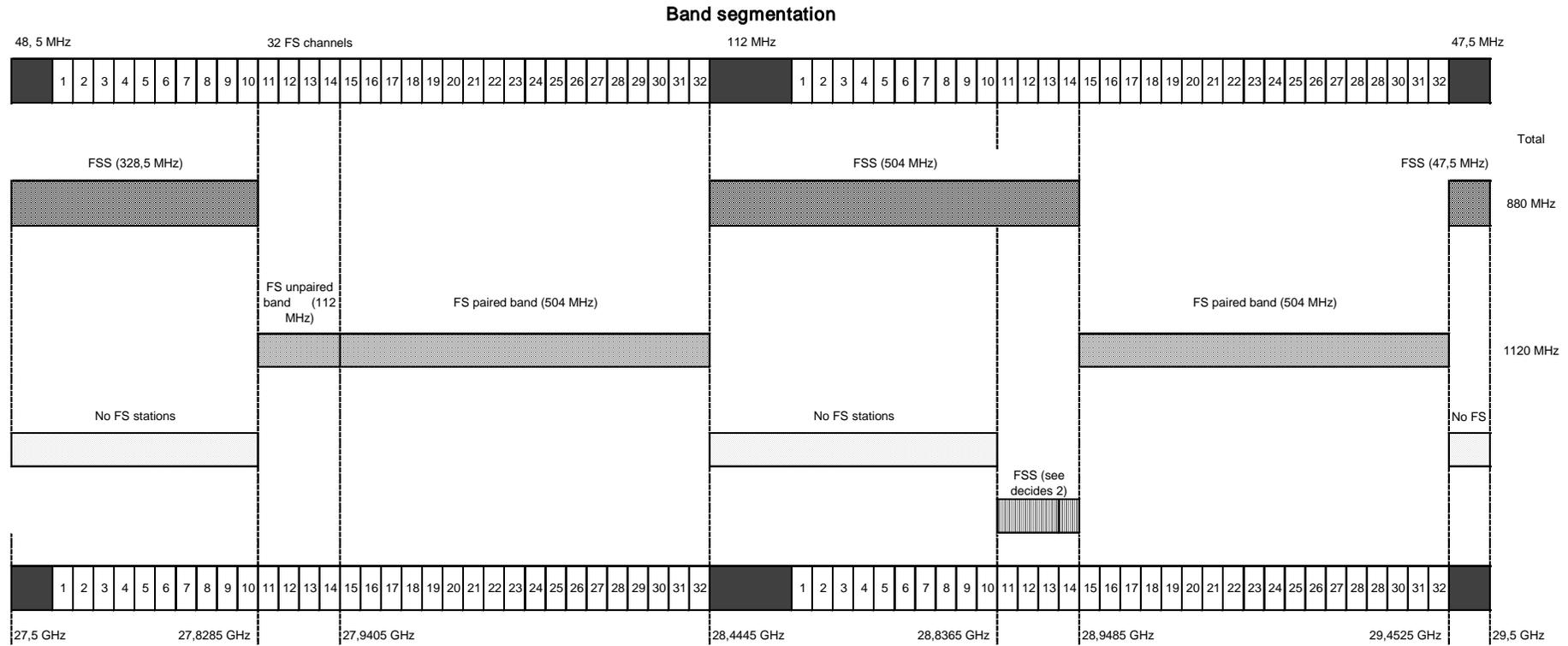


Figure 1: Band segmentation for FSS and FS in the band 27.5-29.5 GHz

ANNEX 2: TECHNICAL AND OPERATIONAL REQUIREMENTS FOR UNCOORDINATED FSS EARTH STATIONS OPERATING IN FREQUENCY BANDS WITHIN THE RANGE 27.5-29.5 GHz

Uncoordinated FSS earth stations transmitting within the band 27.5-29.5 GHz shall comply with the following requirements:

1. In the adjacent bands used by FS, i.e. 27.8285-28.4445 GHz, 28.8365-28.9485 GHz (where applicable) and 28.9485-29.4525 GHz, the off axis² e.i.r.p. density radiated shall be limited to -35 dBW/MHz. This limit shall in any case be met at 3° or less above the local horizontal plane;
2. the elevation angle shall be higher than 3°;
3. FSS systems using uncoordinated FSS earth stations in the bands referred to in Decides 1 and 2 shall implement Automatic Power Control in the uncoordinated FSS earth stations and/or automatic on-board satellite gain control;
4. Uncoordinated FSS earth stations shall not have their occupied band edges closer than 10 MHz from the edges of the bands identified in Decides 3 and in Decides 2 where applicable.
5. To ensure compliance with aircraft HIRF protection criteria based on ECC Report 272 [3], using a maximum HIRF field strength of 150 V/m:
 - 5.1. The maximum e.i.r.p. of uncoordinated FSS earth stations at fixed locations shall be limited to 60 dBW ;
 - 5.2. The maximum e.i.r.p. of uncoordinated FSS earth stations, as defined above, operating within TDMA networks shall be respected after taking into consideration the duty cycle (see section 3.3 and 3.4 of ECC Report 272).

² Off axis refers to angles greater than 7° from the axis of the main beam or to angles greater than the declared minimum elevation angle of the uncoordinated FSS Earth station, whichever is lower.

ANNEX 3: LIST OF REFERENCES

This annex contains the list of relevant reference documents.

- [1] ECC/REC/(11)01: "Guidelines for assignment of frequency blocks for Fixed Wireless Systems in the bands 24.5-26.5 GHz, 27.5-29.5 GHz and 31.8-33.4 GHz "
- [2] ERC Recommendation T/R 13-02: "Preferred channel arrangements for Fixed Service systems in the frequency range 22.0 - 29.5 GHz"
- [3] ECC Report 272: "Earth Stations operating in the frequency bands 4-8 GHz, 12-18 GHz and 18-40 GHz in the vicinity of aircraft", January 2018
- [4] ERC Report 99: "The analysis of the coexistence of two FWA cells in the 24.5 - 26.5 GHz and 27.5 - 29.5 GHz bands", October 2000
- [5] ERC Report 97: "Fixed Wireless Access (FWA) spectrum engineering & frequency management guidelines (qualitative)", February 2000
- [6] ECC Report 32: "Mechanisms to improve co-existence of Multipoint (MP) systems", October 2003
- [7] ECC/DEC/(05)08: "The availability of frequency bands for high density applications in the Fixed-Satellite Service (space-to-Earth and Earth-to-space)"
- [8] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC