

EUROPEAN RADIOCOMMUNICATIONS COMMITTEE

ERC Decision
of 30 June 1997
on the Harmonised Use of Spectrum
for Satellite Personal Communication Services (S-PCS)
operating within the bands
1610-1626.5 MHz, 2483.5-2500 MHz,
1980-2010 MHz and 2170-2200 MHz

(ERC/DEC/(97)03)



EXPLANATORY MEMORANDUM

1 INTRODUCTION

A number of new satellite systems within the mobile-satellite service (MSS), offering services for individual users, will be introduced before the year 2001, providing either global or regional coverage. These new satellite systems are identified as providing Satellite Personal Communications Services (S-PCS). Other terms such as Global Mobile Personal Communications by Satellite (GMPCS) or Satellite-Personal Communication Networks (S-PCN) are also being used in other fora to describe either a part or all of S-PCS.

The aim of this Decision is to provide a common approach for CEPT administrations:

- for the provisional designation and identification of spectrum within the bands 1610 – 1626.5 MHz, 2483.5 - 2500 MHz, 1980 - 2010 MHz and 2170 - 2200 MHz for the use by Mobile Earth Stations (MESs) of individual S-PCS systems as shown in Annex 1 to this Decision;
- to use the milestone criteria and procedures described in Annexes 2 and 3 respectively, and the findings of the Milestone Review Committee (MRC), to monitor the progress of each S-PCS system towards the offering of service within the CEPT.

This ERC Decision is one of a ‘family’ of Decisions regarding the introduction and use of MESs of S-PCS systems. Related CEPT Decisions concern:

- the free circulation and licensing for S-PCS MESs (ERC/DEC/(97)05);
- mutual recognition of conformity assessment procedures including marking of radio equipment and radio terminal equipment (ERC/DEC/(97)10)
- the transition of existing services to facilitate the introduction of S-PCS (ERC/DEC/(97)04);
- the ECTRA Decision on harmonisation of authorisation conditions and co-ordination of procedures in the field of Satellite Personal Communications Services (S-PCS) in Europe operating within the bands 1610 – 1626.5 MHz, 2483.5 - 2500 MHz, 1980 - 2010 MHz and 2170 - 2200 MHz of 3 July 1997. (ECTRA/DEC(97)02).

This Decision and the companion Decisions shall be reviewed at least every two years by the CEPT with a view to making adjustments, as necessary.

2 REQUIREMENT FOR AN ERC DECISION

The ERC recognises that a harmonised implementation of frequency assignments for MESs of S-PCS will be of greatest benefit to S-PCS operators as well as to the users of these MESs and will facilitate their introduction in Europe. A commitment by CEPT members to implement the ERC Decision as described in this document will provide a clear indication that frequencies for S-PCS will be used in a harmonised way throughout Europe.

3 BACKGROUND

WARC-92 allocated the bands 1610 – 1626.5 MHz (Earth-to-space), 1980 - 2010 MHz (Earth-to-space), 2483.5 - 2500 MHz (space-to-Earth) and 2170 - 2200 MHz (space-to-Earth) to the mobile satellite service on a primary basis, and the band 1613.8 – 1626.5 MHz (space-to-Earth) on a secondary basis.

The assignment of spectrum to MESs of S-PCS systems needs to be harmonised in Europe if a level playing field for the introduction of S-PCS is to be provided and if maximum spectrum efficiency is to be achieved. Annex 1 shows the spectrum in the bands covered by this Decision, identified for use by various MESs of S-PCS systems.

There is concern within the ITU on the existence of ‘paper’ satellites. With the limited spectrum available to MSS it has been decided that spectrum should be made available to those S-PCS systems that are likely to offer services within the CEPT before the beginning of the year 2001. Annex 3 provides a procedure with which the progress of a satellite system toward the offering of service over the CEPT can be monitored and evaluated, in order to remove as far as possible the possibility of the existence of paper satellites.

4 SCOPE OF THE ERC DECISION

This ERC Decision provides the provisional identification of spectrum to the MESS of individual S-PCS systems and milestone criteria for the introduction of S-PCS systems within CEPT administrations. The Decision covers S-PCS MESSs to be brought into operation in the bands 1610 – 1626.5 MHz, 1980 - 2010 MHz, 2170 - 2200 MHz and 2483.5 - 2500 MHz before 1 January 2001. It should be noted that the systems identified in Table 2 of Annex 1 to the Decision have fulfilled the initial criteria detailed therein. This table will be amended, as appropriate on the basis of the replies received from the public call for expression of interest on the provision of S-PCS. It should also be noted that this list of systems can be modified, or augmented, at any time.

5 EXPLANATORY REMARKS

5.1 The adoption of the Decision

Administrations that have committed to implement this Decision are expected to make frequencies available for the use by the MESSs of S-PCS systems as identified in this Decision. Administrations that have committed to implement this Decision must communicate the national measures taken to implement the Decision to the ERC Chairman and the ERO when it is nationally implemented.

5.2 The milestone criteria and the Milestone Review Committee

The key milestones relating to the introduction of each S-PCS system are detailed in Annex 2. The successful completion of these milestones would enable an S-PCS system to begin continuous commercial service where it has received national authorisations to do so. It should be noted that the free circulation of MESSs is dealt with by the companion ERC Decision. (ERC/DEC/(97)05).

The Milestone Review Committee (MRC), the terms of reference and working procedures of which are given in Annex 3 of this Decision, shall monitor each system's fulfilment of the milestone criteria and shall advise administrations and inform ERC and ECTRA accordingly. The MRC will be established in partnership with CEPT ECTRA.

**ERC Decision
of 30 June 1997**

**ERC Decision on the harmonised use of spectrum for
Satellite Personal Communications Services (S-PCS) operating
within the bands 1610 - 1626.5 MHz, 2483.5 - 2500 MHz, 1980 - 2010 MHz AND 2170 - 2200 MHz**

(ERC/DEC/(97)03)

The European Conference of Postal and Telecommunications Administrations,

considering:

- (a) that WARC-92 allocated the bands 1610-1626.5 MHz (E→Sp), 2483.5-2500 MHz (Sp→E), 1980-2010 MHz (E→Sp) and 2170 - 2200 MHz (Sp→E) to the mobile-satellite service (MSS) on a primary basis, and the band 1613.8 - 1626.5 MHz (Sp→E) on a secondary basis;
- (b) that the use of the frequencies mentioned in *Considering* (a) above is subject to co-ordination under Resolution 46 (WRC-95);
- (c) that the transmissions from Mobile Earth Stations (MESs) in the band 1610 - 1626.5 MHz are subject to the e.i.r.p limits given in RR S5.364;
- (d) that the use of the band 1610 - 1626.5 MHz is also subject to the provisions of RR S5.363;
- (e) that RR S5.372 requires that harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6 - 1613.8 MHz by stations of the radio determination-satellite and mobile-satellite services in the bands 1610 - 1626.5 MHz;
- (f) that WRC-95 adopted further provisions relating to the bands mentioned in *Considering* (a) above;
- (g) that the use of the bands 1980 - 2010 MHz and 2170 - 2200 MHz by S-PCS will be subject to successful frequency co-ordination with the fixed service and, where necessary, the migration of the fixed-service stations from the bands concerned (see RR S5.389A);
- (h) that a number of S-PCS providing voice and data communication (including facsimile) are to be brought into operation in the bands mentioned in *Considering* (a) above;
- (i) that each S-PCS system requires a specified minimum bandwidth to be commercially viable;
- (j) that the use of the MES by a given S-PCS system requires specific frequency assignments;
- (k) that the free circulation and licensing of the MESs is subject to a separate ERC Decision, i.e. ERC/DEC/(97)05;
- (l) that a harmonised frequency assignment for MES in S-PCS systems in Europe is needed to facilitate the efficient use of spectrum;
- (m) that a milestone process will allow the monitoring and evaluation of the progress of a satellite system toward the offering of service, in order to remove as far as possible the possibility of the existence of paper satellites;
- (n) that S-PCS using CDMA and TDMA cannot share the same frequency band;
- (o) that CEPT believes that S-PCS, both global systems and regional systems, to be brought into operation in the bands mentioned in *Considering* (a) should be provided with a level playing field and that the use of frequency assignments by MESs of S-PCS systems should be subject to compliance with certain milestones on the deployment of the relevant S-PCS system;

- (p) that the migration of the fixed service systems from the bands 1980 - 2010 MHz and 2170 - 2200 MHz is the subject of a separate ERC Decision; (ERC/DEC/(97)04).
- (q) that the complementary CEPT ECTRA Decision on harmonisation of authorisation conditions and coordination of procedures in the field of S-PCS incorporates the milestone procedure introduced by this Decision;
- (r) that some administrations have already established due diligence procedures to reduce the possibility of paper satellites;
- (s) the ERC Decision on the frequency bands for the introduction of the Universal Mobile Telecommunication Service (UMTS), (ERC/DEC/(97)07).

DECIDES

1. that the provisional designation of frequency bands for use by MESs of S-PCS systems to be brought into operation before 1 January 2001 for the provision of S-PCS within the CEPT shall be made within the bands 1610-1626.5 MHz, 2483.5-2500 MHz, 1980-2010 MHz and 2170-2200 MHz as shown in Table 1 of Annex 1 and the provisional identification of spectrum for the MES of candidate S-PCS systems should be as shown in Table 2 of Annex 1, which is based on the information that was made available by candidate system operators;
2. that the S-PCS systems to be operated within these bands shall meet the milestone criteria given in Annex 2;
3. that a Milestone Review Committee (MRC) shall be established in accordance with Annex 3, primarily to examine whether the milestone criteria are met for the satellite systems applying for spectrum in the bands covered by this Decision;
4. that the MRC shall be composed of officials of those CEPT administrations that have committed themselves to implement this Decision or that are signatories of the companion ECTRA Decision;
5. that an S-PCS system meeting all the milestone criteria in accordance with Annex 2 before 1 January 2001 shall not have priority with regard to the access to the available spectrum over another S-PCS system meeting all milestone criteria later but also before 1 January 2001;
6. that for an S-PCS system which meets all milestones up to and including milestone 6 in accordance with Annex 2, and which becomes operational and ready to provide commercial service within the CEPT prior to 1 January 2001, its MESs may operate on a provisional basis, subject to national authorisation in the relevant administration which may be conditional on the outcome of frequency coordination with other services in that country, within the minimum frequency band identified for that system in the column headed 'Minimum Band (in MHz)' in Table 2 of Annex 1 or subsequently by the MRC;
7. that in the event an S-PCS system does not meet the milestones, the CEPT ERC shall revise as necessary the provisional designation of frequency bands and the provisional identification of spectrum shown in Tables 1 and 2 of Annex 1, respectively, as a part of the review process in *Decides 10*;
8. that any modifications and inclusion of new S-PCS systems, as proposed by CEPT administrations, which are intended to be brought into operation before 1 January 2001 and which are to be added to the list of candidate systems referred to in Table 2 of Annex 1, shall be carried out by the MRC;
9. that CEPT administrations in conducting frequency co-ordination shall take into account *Decides 1, 2, 5 and 6* above;
10. that this Decision shall be reviewed at least every two years by the ERC with the assistance of the ERO taking into account the findings of the MRC;
11. that this Decision shall enter into force on 1 October 1997;
12. that CEPT Member 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 1

Table 1

Provisional designation of frequency bands to S-PCS employing CDMA and TDMA technologies and operating within the bands

1610 - 1626.5 MHz, 2483.5 - 2500 MHz, 1980 - 2010 MHz and 2170 - 2200 MHz

1) 1610 - 1626.5 MHz¹

1610	1621.35 *	1626.5
S-PCS using CDMA technologies		S-PCS using TDMA technologies

2) 2483.5 - 2500 MHz¹

2483.5	2498*	2500
S-PCS using CDMA technologies		S-PCS using TDMA technologies

* The boundaries will be subject to review depending on the outcome of frequency assignments to the systems identified in the Decision.

3) 1980 - 2010 MHz¹

1980	1995	2010
to be decided ²		S-PCS using TDMA technologies²

4) 2170 - 2200 MHz¹

2170	2185	2200
to be decided ²		S-PCS using TDMA technologies²

Note 1: The further requirements for any S-PCS, in addition to the amounts identified in the table, shall be considered on a case-by-case basis by the CEPT ERC when such requirements are identified to meet the system design or to cater for the growth in traffic. The current segmentation between CDMA and TDMA S-PCS systems assumes a larger number of CDMA S-PCS systems compared to the number of TDMA S-PCS systems. The boundaries will be subject to review.

Note 2: Systems meeting the milestone criteria may operate within the bands 1980 - 2010 MHz and 2170 - 2200 MHz, subject to compliance with the milestone criteria and successful frequency co-ordination with other services. The migration of other services from the bands 1995 - 2010 MHz and 2185 - 2200 MHz shall be achieved in accordance with ERC Decision, ERC/DEC/(97)04. When the other services have achieved migration from these bands, S-PCS systems shall operate according to the bands identified in the table.

Table 2

List of candidate systems

The following list of systems is based on the information given by the network operators and submitted by CEPT Administrations. These systems have fulfilled the initial criteria¹ for this frequency band and will be taken into account by the Milestone Review Committee (MRC).

	System	Access method	Tuning range (in MHz) ²	Minimum band (in MHz)	Minimum requirement ³ (in MHz)
1)	Courier	CDMA	1610-1621.35 2483.5-2494.85	1611.45-1621.35 2484.95-2494.85	9.9 9.9
2)	EAST ⁴	TDMA	1610-1626.5 ⁵	1619.35-1622.35	3
3)	Globalstar	CDMA	1610-1626.5 2483.5-2500	1610-1621.35 2483.5-2500	11.35 16.5
4)	Horizon ⁶ (Inmarsat)	TDMA	1980-2010 2170-2200	1995-2000 2185-2190	5 5
5)	ICO-1	TDMA	1985-2015 2170-2200	1997.5-2010 2187.5-2200	12.5 12.5
6)	Iridium	TDMA	1616.0-1626.5	1621.35-1626.5	5.15 ⁷
7)	Odyssey	CDMA	1610-1626.5 2483.5-2500	1610-1621.35 2483.5-2500	11.35 16.5
8)	Quasigeo L2	TDMA	1610-1626.5 2483.5-2500	1624.5-1626.5 2498-2500	2 2
9)	Quasigeo L3	TDMA	1980-2010 2170-2200	2005-2010 2195-2200	5 5
10)	ELEKON-ST IR	CDMA	1613.8-1626.5 2490-2494		2.3 2.3
11)	SIGNAL (a)	CDMA	1610-1626.5 2483.5-2500	1610-1626.5 2483.5-2500	4x3.56 4x3.56
12)	SIGNAL (b)	CDMA	1980-2010 2170-2200	1980-2010 2170-2200	4x7.04 4x7.04
13)	PETALRING 30C-S	TDMA	1980-2010 2170-2200	2005 - 2010 2195 - 2200	5 5

¹ The initial criteria are:

- Submission of Information for Advance Publication to the ITU;
- System is planned to go into operation before 1 January 2001.

² The frequency bands under consideration are used by the following operational systems of the Russian Federation:

- the Global Satellite Navigation System (GLONASS-M (1596-1621 MHz down link));
- the earth exploration satellite system PROGNOZ (2120-2300 MHz down link).

The frequency bands under consideration are planned to be used by the following systems of the Russian Federation:

- the future satellite system PROMETEY (2490-2500 MHz down link) published on 18.07.95 ASEC No. 1296 (planned date of putting into operation: year 2000).

³ The column states the minimum requirement as submitted by at least one CEPT administration.

⁴ The UK administration is still considering the coordination of the EAST system in the 1.5/1.6 GHz bands or the use of the 2 GHz bands by EAST.

⁵ The total EAST tuning ranges are: 1525-1559 MHz, 1610-1660.5 MHz, 1980-2010 MHz, and 2170-2200 MHz.

⁶ The 2 x 5 MHz identified represents the initial spectrum required for the Inmarsat 4th generation Horizon system. The spectrum requirement for Inmarsat Horizon will be met in frequency bands below 2000 MHz and 2190 MHz.

⁷ Although 5.15 MHz represents the minimum start-up technical requirement for the IRIDIUM system, IRIDIUM may need a minimum of 8.25 MHz starting from the top (1626.5 MHz) of the band, in order to meet its commercial objectives by 2001.

ANNEX 2

Milestones for the introduction of S-PCS within the bands 1610 - 1626.5 MHz, 2483.5 - 2500 MHz, 1980 - 2010 MHz and 2170 - 2200 MHz

INTRODUCTION

The milestones to be applied by the Milestone Review Committee (MRC) are listed below.

A satellite network operator may be represented by different service providers in different countries.

MILESTONES

1. Submission of ITU Advance Publication and Co-ordination Documents

The satellite network operator should provide clear evidence that the administration responsible for an S-PCS system has submitted ITU RR Appendix 4 'Advance Publication Information to Be Furnished for a Satellite Network' and ITU RR Appendix 3 'Notices Relating to Space Radiocommunications and Radio Astronomy Stations'.

2. Satellite manufacturing

The satellite network operator should provide clear evidence of a binding agreement for the manufacture of its satellites. The document should identify the construction milestones leading to the completion of manufacture of satellites required for the commercial service provision. The document should be signed by the satellite network operator and the satellite manufacturing company and should be available for inspection by the MRC. If they are the same, a commitment should also be provided by the satellite network operator.

3. Completion of the Critical Design Review

The Critical Design Review is the stage in the spacecraft implementation process at which the design and development phase ends and the manufacturing phase starts.

The satellite network operator should provide clear evidence of the completion of the Critical Design Review in accordance with the construction milestones indicated in the satellite manufacturing. The declaration, signed by the satellite manufacturing company and indicating the date of the completion of the Critical Design Review, should be available for inspection by the MRC.

4. Satellite launch agreement

The satellite network operator should provide clear evidence of a binding agreement to launch the minimum number of satellites required to provide a continuous service within the CEPT. The document should identify the launch dates and launch services and the indemnity contract. The document should be signed by the satellite network operator and the satellite launching companies and should be available for inspection by the MRC.

5. Gateway Earth Stations

The satellite network operator should provide clear evidence of a binding agreement for the construction and installation of Gateway Earth Stations that will be used to provide S-PCS within the CEPT. This document should be available for inspection by the MRC.

6. Launch of satellites

- (a) The satellite network operator should make available for inspection by the MRC documents confirming the first successful satellite launch and in-orbit deployment.
- (b) The satellite network operator of an NGSO system should also provide periodic evidence of subsequent launches and successful in-orbit deployment of satellites in the constellation.

Provision of documentation relating to (a) shall constitute compliance with this milestone.

7. Frequency co-ordination

The satellite network operator should submit to the MRC documents relating to the successful frequency co-ordination of the system pursuant to the relevant provisions of the Radio Regulations. However, a system which demonstrates compliance with milestones 1 to 6 inclusive is not obliged to demonstrate at this stage completion of successful frequency co-ordination with those S-PCS systems which fail to comply adequately and reasonably with milestones 1 to 6 inclusive.

8. Provision of satellite service within CEPT

Before 1 January 2001 the satellite network operator shall notify the MRC that it has launched, and has available for the provision of service, the number of satellites it previously identified under milestone 4 as necessary to provide continuous commercial service, and that it shall be providing commercial service within the CEPT using the frequency bands identified in the Table 2 of Annex 1.

ANNEX 3

Milestone Review Committee

1. Terms of reference

The Milestone Review Committee (MRC) shall

- 1.1 monitor the compliance with the milestones by applicants, in a transparent and non-discriminatory manner, and in accordance with the procedures established in Section 2;
- 1.2 seek information as necessary from the applicants, on the compliance with the milestones;
- 1.3 make recommendations to administrations, ERC and ECTRA, upon examination of applications, on the compliance with milestones by S-PCS systems, and appropriate methods of handling of any difficulties arising, in order to assist administrations in offering authorisations;
- 1.4 make any modification and inclusion of new S-PCS systems, proposed by CEPT administrations, that are intended to be brought into operation before 1 January 2001 and that meet the initial criteria given in Note 1 to Table 2 of Annex 1, to the list of candidate systems in Table 2 of Annex 1;
- 1.5 establish a co-ordinated procedure within the CEPT, involving a number of administrations, for the monitoring of the spectrum utilised by S-PCS systems for the systems that have been implemented up to 1 January 2001, and make recommendations to administrations, ERC and ECTRA as necessary;
- 1.6 report on a regular basis to administrations, ERC and ECTRA on whether scarcity of frequency spectrum is likely to represent, at some point in time, a constraint on the number of S-PCS systems which can be provided within CEPT in the relevant bands, and propose the necessary measures to overcome any difficulties;
- 1.7 identify, as far as possible, any additional requirements of administrations which should be met by applicants and on which further information should be provided in the applications; this would allow it to prepare a standard format for the application form to be completed by applicants.

2. Working procedures

2.1 Monitoring the compliance with the milestones

Annex 2 identifies the milestones relating to the introduction of S-PCS systems. The successful compliance with these milestones by the network operators concerned would allow CEPT administrations to decide on the assignment of frequencies to Mobile Earth Stations of the S-PCS systems. It would also allow administrations to make certain decisions on the authorisations. The monitoring of compliance shall be carried out in accordance with the following procedure:

- 2.1.1 If a milestone or several milestones are achieved at the date stated by the applicant ("milestone date"), the MRC shall inform, in a timely manner, the ERC, ECTRA and the relevant administrations.
- 2.1.2 If a milestone is not achieved at the milestone date, the MRC shall communicate with the applicant seeking an explanation for the non-compliance within four weeks. The MRC shall send copies of the correspondence to the Chairmen of the ERC and ECTRA and the relevant administrations.
- 2.1.3 When the MRC has received a response from the applicant, it will seek information from the applicant about a new date for this milestone and confirmation or adjustments of the dates for the following milestones. The response and dates, possibly revised, will be brought to the attention of relevant administrations.

2.1.4 In the event that:

- either the four-week period expires without appropriate response from the relevant party,
- or the MRC concludes that the explanation provided is not sufficient reason for failing to achieve the milestone date,

then the MRC shall advise the administrations of the treatment of the application noting that MRC advice should lead to the establishment of a co-ordinated position with the CEPT.

2.2 Monitoring of spectrum usage

The MRC shall establish a co-ordinated procedure within the CEPT, involving a number of administrations, for the monitoring of the spectrum utilised by all the satellites of S-PCS systems for the systems that have been implemented up to 1 January 2001. The MRC shall compare the spectrum utilised by the systems against the “minimum band” and “minimum requirements” identified in the Table 2 of Annex 1 and make recommendations to administrations on adjustments necessary to this Table. These adjustments may be to expand or to reduce the minimum requirements given in this Table. However, in making these recommendations, the MRC shall take due account of frequency compatibility within the S-PCS systems and with other radio services.

2.3 Monitoring of availability of frequencies

Taking into account the information made available to the MRC by the applicants and the results of the examination on compliance with milestones and monitoring of spectrum usage, as well as any frequency co-ordination efforts between operators, the MRC will assess whether and when scarcity of frequency spectrum is likely to become a problem.

3. Confidentiality

It is anticipated that the applicants seeking authorisation would offer confidential information relating to implementation of a S-PCS system and relating to its commercial operations either directly or indirectly to the MRC. The confidentiality of information provided by an applicant will be treated as such by the MRC. Pursuant to this, administrations will take all practical steps to limit the circulation of confidential material to those who need to see it.