ELECTRONIC COMMUNICATIONS COMMITTEE

ECC Decision
of 24 March 2006
on the harmonised utilisation of spectrum
for terrestrial IMT-2000/UMTS systems operating
within the bands 1900 - 1980 MHz,
2010 - 2025 MHz and 2110 - 2170 MHz

(ECC/DEC/(06)01)
(128/1999/EC)

EXPLANATORY MEMORANDUM

1 INTRODUCTION

Since 1997 CEPT has adopted a series of Decisions and Reports regarding the implementation of UMTS. These CEPT deliverables concern:

- Frequency bands for the introduction of UMTS (ERC/DEC/(97)07);
- Harmonised use of bands 1980-2010 MHz and 2170-2200 MHz by the mobile-satellite service including satellite UMTS (ERC/DEC/(97)03);
- Global circulation of IMT-2000 terminals, ERC Report No. 60;
- Adjacent band compatibility between UMTS and other services in the 2 GHz band, ERC Report 65;
- Extending ERC/DEC/(97)07 on the frequency bands for introduction of terrestrial Universal Mobile Telecommunications System (UMTS), (ERC/DEC/(00)01);
- Designation of the band 2500-2690 MHz to IMT-2000/UMTS (ECC/DEC/(02)06);
- Harmonised utilisation of spectrum for IMT-2000/UMTS within the band 2500-2690 MHz (ECC/DEC/(05)05);
- Sharing and adjacent band compatibility between UMTS/IMT-2000 in the band 2500-2690 MHz and other services, ECC Report 45.

In March 2005 the ECC Rules of Procedure were amended to require that each Decision shall be reviewed by the ECC every three years from its date of adoption to determine the extent of its implementation and the take-up of any frequency bands designated in the Decision, taking account of an initial assessment made by the Office, and any other relevant information. As a consequence of this review the ECC Plenary shall decide whether to maintain, revise or abrogate the Decision.

Following an initial review it has been decided to consolidate and bring up to date the provisions of the earlier CEPT Decisions related to the ‘core’ IMT-2000/UMTS spectrum bands and to provide a common approach for CEPT administrations that is consistent with later Decisions dealing with IMT-2000/UMTS use in the band 2500-2690 MHz.

In particular, this Decision aims to provide a common approach:

- for the planning and use of spectrum and channelling arrangements within the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz;
- for making available spectrum for IMT-2000/UMTS subject to market demand thus ensuring efficient and effective use of these frequency bands within the CEPT.
- ECC Decision (05)05 follows a similar approach for addressing the IMT-2000/UMTS extension band (2500-2690 MHz).

This Decision replaces the earlier Decisions:

- ERC/DEC/(97)07 on the frequency bands for the introduction of the Universal Mobile Telecommunications System (UMTS);
- ERC/DEC/(99)25 on the harmonised utilisation of spectrum for terrestrial Universal Mobile Telecommunications Systems (UMTS) operating in the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz; and
- ERC/DEC/(00)01 extending ERC/DEC/(97)07 on the frequency bands for the introduction of terrestrial Universal Mobile Telecommunications System (UMTS).

2 BACKGROUND

WARC'92 identified a total of 230 MHz spectrum for third generation mobile radio systems, known as IMT-2000 (then known as FPLMTS) at 2 GHz.

In 1997 the core frequency bands for Universal Mobile Telecommunications Systems (UMTS) in Europe were identified by the CEPT in ERC/DEC/(97)07. This Decision designated 155 MHz of spectrum to terrestrial UMTS applications with an additional 60 MHz for UMTS satellite services. In Europe, the 15 MHz spectrum at 1885-1900 MHz identified by WARC'92 for IMT-2000 was not designated for UMTS in ERC/DEC/(97)07 due to current usage of this band by DECT. The Decision required that administrations make available at least 2 x 40 MHz from within these bands by 2002. Subsequently, In response to Mandate 1 of the European Commission to CEPT, ERC/DEC/(00)01 extended ERC/DEC/(97)07 to require that administrations make available the entire 155 MHz of terrestrial spectrum for UMTS and other systems included in the IMT-2000 family by 1 January 2002, subject to geographical spread market demand and national licensing schemes.

Within the IMT-2000 family, the UMTS terrestrial radio access (UTRA) has been developed with 2 modes of operation; a Frequency Division Duplex (FDD) mode and a Time Division Duplex (TDD) mode. The FDD mode provides efficient operation in many UMTS environments, providing wide area coverage and full mobility applications. The TDD mode however may allow operators flexibility in network deployment and to support traffic asymmetry in an efficient way.

In 1999 the ERC adopted ERC/DEC/(99)25 on the harmonised utilisation of spectrum for terrestrial UMTS operating within the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz. This requested that, subject to market demand, Administrations make provisions to allow the operation of UMTS self provided applications in a self coordinating mode in the frequency band 2010-2020 MHz. It also indicated that the designation of this band for UMTS self provided applications may be reviewed two years after the date of entry into force. ERC/DEC/(99)25 was developed under Mandate 2 of the European Commission to CEPT. More than five years after the entry into force of ERC/DEC/(99)25, it has become clear that the anticipated market for UMTS self provided applications has not materialised.

In July 1999, the European Commission issued a Mandate 3 for the development of a common plan to identify, with a view to make available between the years 2005 and 2010, additional frequency spectrum for the provision of terrestrial 3G mobile and wireless services in the Community. This resulted in a European Common Proposal (ECP) for 160 MHz of additional spectrum for the terrestrial component of IMT-2000.

Mandate 4 of the European Commission to CEPT has triggered a decision process intended to guarantee that sufficient additional spectrum for third generation mobile and wireless communication systems will be made available in the European Union in due time, in a coordinated manner and based on market demand. The Commission proposed that CEPT should follow a staged approach for the deliverables requested by Mandate 4, ultimately leading to the adoption, by 31 March 2003, of an ECC Decision designating the additional frequency bands to be used for IMT-2000 systems and defining a 'reference date' by which the additional spectrum should become available. The outcome of the preliminary investigations undertaken by CEPT and the validation of its findings should be described in a Report from CEPT to be delivered to the Commission by 30 November 2002. This Report from CEPT should provide a validation of the initial proposals developed by CEPT and the basis for the decisions subsequently enshrined in a formal ECC Decision.

Finally, in March 2005. the ECC finally adopted ECC/DEC(05)05 on the harmonized utilisation of spectrum for IMT-2000/UMTS systems operating within the band 2500-2690 MHz. This Decision was developed in response to Mandate 5 of the European Commission to CEPT "to harmonize the frequency usage within the additional frequency band of 2500-2690 MHz to be made available for IMT-2000/UMTS systems in Europe.

In December 2004 the European Union sent a liaison statement to CEPT highlighting the results of a questionnaire to Member States on use of the band 2010-2025 MHz. This indicated, "… that there does not seem to be any interest for self provided applications which are currently foreseen in the band 2010-2020 MHz…".

It is also noted that there is a desire amongst some administrations and operators to allow greater flexibility in the use of the bands 1900-1920 MHz and 2010-2025 MHz, with the choice between FDD uplink and TDD mode being made subject to market demand on a national basis.

The purpose of this Decision is to facilitate efficiency in utilisation of the IMT-2000/UMTS bands across the CEPT by identifying a common approach to spectrum planning. It replaces the earlier Decisions ERC/DEC/(97)07, ERC/DEC/(99)25 and ERC/DEC/(00)01, consolidating and updating their provisions,

removing references to self provided applications operating in self coordinating mode, and allowing flexibility between FDD uplink and TDD modes of operation in the bands 1900-1920 MHz and 2010-2025 MHz.

The values used in **Annex 1** of this Decision have been based on the inter-service compatibility studies from ERC Report 65, and intra-service carrier spacing studies undertaken within ETSI SMG02.

3 REQUIREMENT FOR AN ECC DECISION

The ECC recognises that a harmonised implementation of IMT-2000/UMTS will be of greatest benefit to operators, manufacturers as well as users and will facilitate the successful introduction of IMT-2000/UMTS across Europe.

The ECC recognises that for 3rd Generation services to be introduced successfully and in accordance with the global IMT-2000 definition, manufacturers and operators must be given the confidence to make the necessary investment. The ECC believes that the successful introduction of 3rd Generation services will be facilitated by harmonised use of the IMT-2000/UMTS spectrum across the CEPT, and a commitment by CEPT member countries to implement this Decision will provide a clear indication that the required paired and unpaired frequency bands will be made available for IMT-2000/UMTS in a timely manner and on a Europe-wide basis.

The ECC recognises that harmonised use of the frequency bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz must ensure that spectrum is available for IMT-2000/UMTS systems while allowing administrations to respond to market demand.

In considering use of the IMT-2000/UMTS spectrum for FDD and TDD modes, it is necessary to consider the nature of traffic expected to be carried by IMT-2000/UMTS networks and the need to accommodate asymmetric traffic. Flexibility in the use of FDD and TDD modes in the frequency bands identified for IMT-2000/UMTS may be desirable to enable operators to plan their networks in response to evolving requirements.

Annex 1 of the ERC Decision has however been developed on the basis that the use of the band 1920-1980 MHz for TDD mode should not precluded, to enable the UMTS frequency plan to be adapted to meet future requirements. This Decision does not therefore preclude this type of operation on regulatory grounds.

ECC Decision

of 24 March 2006

on the harmonised utilisation of spectrum for terrestrial IMT-2000/UMTS systems operating within the bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz

(ECC/DEC/(06)01)

(128/1999/EC)

Comparable technical specifications to those given in this ECC Decision are given in Commission Decision 128/1999/EC of 14 December 1998. EU/EFTA Member States and, if so approved by the EEA Joint Committee, Iceland, Liechtenstein and Norway are obliged to implement the EC Decision.

"The European Conference of Postal and Telecommunications Administrations,

considering

a) that there is a growing demand for interoperable mobile voice services and interoperable mobile data services;

b) that UMTS Terrestrial Radio Access UTRA has been developed to meet this demand;

c) that UMTS provides third generation mobile services, forming part of the International Mobile Telecommunications 2000 (IMT-2000) global family of standards;

d) that 3GPP completed the initial standardisation of UMTS (release 99) in March 2000;

e) that the UMTS terrestrial radio interface was defined with two modes of operation; Frequency Division Duplex (FDD) and Time Division Duplex (TDD). In the initial phase of UMTS, it is likely, based on technical considerations, that these modes are used in separate bands. However, techniques to support future asymmetric traffic demand may be required, such as the use of TDD in the FDD uplink band to increase capacity in the downlink direction;

f) that a harmonised spectrum scheme for IMT-2000/UMTS, taking due account of the protection requirements of IMT-2000/UMTS and other radio services, allows efficient use of the spectrum, in particular in border areas;

g) that expansion of IMT-2000/UMTS in the future is predicted to require additional spectrum, based on market demand, when the bands identified in decides 2 of this Decision above are fully utilised;

h) that flexibility for administrations to use the frequency band 2010-2025 MHz and 1900-1920 MHz for either TDD or FDD uplink could be beneficial to meet market demands.

DECIDES

1. that for the purpose of this Decision, IMT-2000/UMTS shall mean equipment complying with ITU-R Recommendation M.1457;

2. that the frequency bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz are designated for terrestrial IMT-2000/UMTS systems;

3. that administrations shall make provisions to allow the harmonised utilisation of spectrum in the frequency bands 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz for terrestrial IMT-2000/UMTS, as identified in **Annex 1** to this Decision;

4. that the frequency bands in decides 2 are available for IMT-2000/UMTS systems as from the entry into force of this Decision, subject to market demand and national licensing schemes;

5. that ERC/DEC/(97)07, ERC/DEC/(99)25 and ERC/DEC/(00)01 are hereby withdrawn;

6. that this Decision shall enter into force on 24 March 2006;

7. that the preferred date for implementation of this Decision shall be 1 October 2006;

8. that CEPT Member 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 web site (http://www.ero.dk) for the up to date position on the implementation of this and other ECC Decisions.

ANNEX 1
HARMONISED SPECTRUM SCHEME FOR IMT-2000/UMTS

1. The frequency band 1920 – 1980 MHz is paired with 2110 – 2170 MHz for FDD operation.
2. The duplex direction for FDD carriers in these bands is mobile transmit within the lower band and base transmit within the upper band.
3. The frequency band 1900 – 1920 MHz may be used either for TDD or for FDD uplink[1].
4. The frequency band 1920 – 1980 MHz may also be used for TDD operation.
5. The frequency band 2010 – 2025 MHz may be used either for TDD or for FDD uplink[2].

For UMTS the following apply:

6. The channel raster is 200 kHz and the carrier frequency is an integer multiple of 200 kHz.
7. FDD carrier spacing between operators is a minimum of 5.0 MHz. FDD carrier spacing within an operators spectrum is variable, based on a 200 kHz raster, and may be less than 5.0 MHz.
8. In the frequency band 1900 – 1920 MHz the TDD carrier spacing between operators is a minimum of 5.0 MHz. TDD carrier spacing within an operators spectrum is variable, based on a 200 kHz raster, and may be less than 5.0 MHz.
9. Carrier spacing between TDD and FDD carriers is a minimum of 5.0 MHz between operators.
10. In the frequency band 2010 – 2025 MHz the FDD or TDD carrier spacing between operators is a minimum of 4.6 MHz. FDD or TDD carrier spacing within an operators spectrum is variable, based on a 200 kHz raster.
11. The carrier nearest to 1900 MHz should be centred at 1902.4 MHz or above[3].
12. The carrier nearest to 1980 MHz should be centred at 1977.2 MHz or below[4].
13. The carrier nearest to 2010 MHz should be centred at 2013.0 MHz or above[5].
14. The carrier nearest to 2025 MHz should be centred at 2022.2 MHz or below.
15. The carrier nearest to 2110 MHz should be centred at 2112.8 MHz or above.
16. The carrier nearest to 2170 MHz should be centred at 2167.2 MHz or below.

For other IMT-2000 radio interfaces:

17. Carrier spacings/centres or the block edges are to be defined on a case by case basis depending on receiver and transmitter characteristics of the radio interface in adjacent channels.

---

[1] The option for FDD uplink use will be for a pairing with another (currently unspecified) band, e.g. part of 2570-2620 MHz FDD downlink band for instance.

[2] The option for FDD uplink use will be for a pairing with another (currently unspecified) band, e.g. part of 2570-2620 MHz FDD downlink band for instance. It is not envisaged that an administration would implement mixed FDD/TDD use in the band 2010-2025 MHz.

[3] If the top DECT channel is used for DECT WLL, additional mitigation techniques might be necessary.

[4] Use of the TDD here would require a greater frequency separation, or other mitigation techniques such as increased filtering, or a combination of these.

[5] An Administration implementing FDD uplink in the band 2010-2025 MHz may choose a carrier centred at 2012.8 MHz or above.