



**ECC PT1**

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Mainz, 15 September 2004  
Our ref.: Reg TP/221-5

Your ref.:

**CEPT bandplan for IMT-2000 in the 2500-2690 MHz band**

Dear Mr Courau,

At its 15<sup>th</sup> meeting in September 2004, ECC PT1 completed work on the draft ECC Decision on the harmonised utilisation of spectrum for IMT-2000/UMTS operating within the band 2500 – 2690 MHz. This document defines the bandplan for the introduction of IMT-2000/UMTS in Europe within this band. The document will now be submitted to ECC for approval. ECC PT1 envisages that 3GPP TSG RAN will wish to start developing specifications for UTRA operating within this band, and is therefore forwarding the draft ECC Decision attached to this liaison statement.

The key features of the draft ECC Decision, relevant to the development of technical specifications are:

- 1) The frequency band 2500-2570 MHz is paired with 2620-2690 MHz, with the mobile transmit within the lower band and base transmit within the upper band.
- 2) Assigned blocks will be in multiples of 5 MHz, with the boundaries on integer multiples of 5 MHz.
- 3) The frequency band 2570-2620 MHz is designated for either TDD or FDD downlink (external)<sup>1</sup>.
- 4) The frequencies of the boundaries of the unpaired TDD blocks is not defined, because this will depend on the size of guardband needed between FDD and TDD.

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<sup>1</sup> The draft CEPT Decision assigns the band 2570-2620 MHz to either IMT-2000 TDD or FDD downlink (external). A FDD downlink only channel within the 2.6 GHz band would be used in conjunction with an uplink channel in a different frequency band (i.e. external). This uplink channel might be located within an unpaired band. Alternatively, a downlink only channel could be used in conjunction with the uplink of a paired channel within a different frequency band. This would support traffic that has a substantial bias towards the downlink.

- 5) It is envisaged that the TDD or FDD downlink channels will have a carrier frequency of  $(n \times 200 + 100)$ kHz.
- 6) ECC PT1 has not addressed the question of what bands might be used for uplink channels in conjunction with FDD downlink (external) channels in the 2.6 GHz band.
- 7) It is envisaged that there would not be a mixed TDD and FDD downlink (external) deployment in the center gap 2570-2620 MHz in the same geographic area. Therefore, the specifications for equipment performance for the FDD downlink (external) do not need to take account of adjacent channel interference from TDD channels.
- 8) It would be highly desirable for the sum of the bandwidths of both guardbands between paired and unpaired spectrum to be kept as small as possible, taking into account effective utilisation of spectrum as well as equipment cost and complexity.

The bandplan is illustrated in Annex 2 of the draft ECC Decision. This ECC Decision is expected to be finally approved by ECC in March 2005, following a period for public comments. ECC PT1 will inform 3GPP when the approval process is complete.

ECC PT1 would be pleased to offer assistance to 3GPP in developing specifications for UTRA for the 2.6 GHz band that allow effective utilisation of this band and reasonable equipment cost and complexity.

Best regards,

Peter Scheele  
ECC PT1 Chairman

Attachment: Draft ECC Decision

Cc: ETSI TC MSG, ETSI ERM RM, 3GPP TSG RAN WG4

# **ELECTRONIC COMMUNICATIONS COMMITTEE**

ECC Decision  
of XX March 2005  
on harmonised utilisation of spectrum for  
IMT-2000/UMTS systems operating within the band  
2500 - 2690 MHz

(ECC/DEC/(05)XX)





## EXPLANATORY MEMORANDUM

### 1 INTRODUCTION

On 9 March 2001, the European Commission issued a Mandate 4<sup>1</sup> calling upon CEPT to undertake preliminary investigations and to adopt the measures necessary to ensure the availability in the community of harmonised frequency bands, within the additional spectrum bands identified by WRC-2000 for the provision of terrestrial and satellite IMT-2000 services. In response to this mandate the ECC adopted Decision(02)06, which decided:

- to designate the 2500 to 2690 MHz band to IMT-2000/UMTS systems;
- that the 2500 to 2690 MHz band should be made available for use by IMT-2000/UMTS systems by 1 January 2008, subject to market demand and national licensing schemes;
- to designate the 2520 to 2670 MHz band for use by terrestrial IMT-2000/UMTS systems; and
- that the detailed spectrum arrangements for the 2500 to 2690 MHz band, as well as the utilisation of the bands 2500 to 2520 MHz / 2670 to 2690 MHz, should be decided in an additional ECC Decision by the end of 2004.

Following CEPT's response to Mandate 4, the European Commission issued Mandate 5<sup>2</sup> in August 2003. This mandate requires CEPT to develop and adopt the measures necessary to ensure a harmonised and efficient use of the frequency band 2500-2690 MHz for IMT-2000/UMTS. Specifically CEPT is mandated to develop channelling arrangements for the band 2500-2690 MHz taking into account and commenting on at least the following issues:

- Availability of the bands 2500-2520 / 2670-2690 MHz for the use by the IMT-2000 satellite component and/or terrestrial component;
- The impact of BSS sound at 2605-2655 MHz (and possibly other services in the band 2500-2690 MHz) on IMT-2000/UMTS services;
- The impact of technological advances such as variable duplex spacing or other developments that may facilitate flexible channelling arrangements as well as technology neutrality, noting that these technologies must be commercially available by 2008;
- The desirability to take utmost account of making regulation technologically neutral, and
- Efficient and harmonised use of spectrum

### 2 BACKGROUND

The CEPT has recognised the importance of the European-wide harmonised availability of IMT-2000/UMTS services to the citizens of Europe.

The first IMT-2000/UMTS systems have been introduced within Europe utilising the frequency bands identified for IMT-2000 at the WARC-92 in RR 5.388 and in accordance with the ERC Decisions (97)07, (99)25 and (00)01 and ERC Recommendation 02-10.

In 1998, the European Community adopted a Decision, to facilitate the rapid and coordinated introduction of compatible UMTS networks and services, DEC No 128/1999/EC, the 'UMTS Decision'. This Decision defined UMTS and described the characteristics which UMTS is to be capable of supporting. It instructed the Commission to give Mandates to CEPT to harmonise frequency use, and to take measures, where appropriate in cooperation with ETSI, to promote a common and open standard for the provision of compatible UMTS services throughout Europe.

The European Commission has issued a series of mandates on IMT-2000/UMTS to CEPT. In response to Mandate 1, the ERC subsequently adopted the Decision ERC/DEC(00)01 making available by 1 January 2002 at the latest, in accordance with commercial demand and subject to national licensing schemes, the full 'core

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<sup>1</sup> Mandate to CEPT to harmonise frequency usage in order to facilitate a co-ordinated implementation in the Community of third generation mobile and wireless communication systems operating in additional frequency bands as identified by WRC-2000 for IMT-2000 systems, 9 March 2001.

<sup>2</sup> Mandate to CEPT to harmonise the frequency usage within the additional frequency band of 2500-2690 MHz to be made available for IMT-2000/UMTS systems in Europe (Mandate 5), August 2003.

bandwidth' (155 MHz) for terrestrial UMTS. A further mandate 2 resulted in the ERC Decision ERC/DEC/(99)25 of 29 November 1999 which contains the spectrum plan for the usage of the 'core band' and provides a common approach to be followed by CEPT administrations when licensing IMT-2000/UMTS services to operate in the 'core band'. In July 1999, the 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/UMTS.

Report ITU-R M.2023 concluded on total spectrum requirements for the terrestrial element of IMT-2000 for the three ITU Regions, which were based on the sum of:

- the spectrum identified for IMT-2000 in RR 5.388,
- the spectrum available in the three Regions for existing second generation systems, and
- the additional spectrum requirement to meet the forecasted traffic volume in geographic areas where the traffic was expected to be the highest.

This additional spectrum was forecasted to be a minimum of 160 MHz in all three Regions by 2010, in those geographic areas where the traffic was expected to be the highest. Europe fully supported these conclusions. These conclusions were included in the CPM report to WRC-2000. At WRC-2000, European Common Proposals were successful on identification of additional spectrum for the terrestrial and satellite components of IMT-2000, including the main candidate band 2500-2690 MHz, see RR 5.384A (WRC-2000) and Resolution 223 (WRC-2000).

Mandate 4 resulted in ECC Decision(02)06 which specified a first set of measures necessary to ensure the availability of harmonised additional frequency bands for the provision of IMT-2000/UMTS services in the Community. Considering that the band 2500 – 2690 MHz is to be made available by 1 January 2008, Decision (02)06 foresaw a second ECC Decision by End of 2004 dealing with the spectrum arrangements for the band 2500 – 2690 MHz..

EC Mandate 5 asks CEPT to develop these spectrum arrangements to ensure a harmonised and efficient use of the frequency band 2500 – 2690 for IMT-2000/UMTS. The Commission proposed that CEPT should follow a gradual approach for the deliverables requested by Mandate 5 aiming for the approval of an ECC Decision on spectrum arrangements and on the use of the 2\*20 MHz at the band edges of 2.6 GHz by March 2005. The outcome of the investigations undertaken by CEPT should be described in a Report to be delivered to the Commission by November 2004 and should be the basis for the ECC Decision.

The standardisation work for IMT-2000/UMTS started in ETSI (European Telecommunications Standards Institute) in 1991. ETSI has defined the system concept and reference model and the standard for UMTS Release 99 was finalised by the end of 1999. The responsibility for developing the technical specifications was transferred to 3GPP and these transposed into standards by the Organisational Partners of 3GPP, including ETSI.

### **3 REQUIREMENT FOR AN ECC DECISION**

The ECC recognises that a harmonised implementation of IMT-2000/UMTS in the band 2500 – 2690 MHz will be of greatest benefit to operators, manufacturers and end users and will promote the continued development of IMT-2000/UMTS services across Europe.

The ECC recognises that for 3<sup>rd</sup> Generation services to continue to be developed 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 continued development of 3<sup>rd</sup> Generation services will be facilitated by harmonised use of IMT-2000/UMTS spectrum across the CEPT, and a commitment by CEPT member countries to implement this Decision will provide a clear indication that additional paired and unpaired frequency bands, necessary for the future successful development of 3<sup>rd</sup> Generation services of will be made available in a timely manner, subject to market demand, and on a Europe-wide basis.

The ECC recognises that harmonised use of the frequency band 2500 – 2690 MHz must ensure that spectrum is available for IMT-2000/UMTS systems while allowing administrations to respond to market demand.

**ECC Decision  
of XX November 2004**

**on the harmonised utilisation of spectrum  
for IMT-2000/UMTS operating within the band 2500 - 2690 MHz**

(ECC/DEC/(05)XX)

The European Conference of Postal and Telecommunications Administrations,

*considering:*

- a) that the ITU has identified at WARC-92 the frequency bands 1885 - 2025 MHz and 2110 - 2200 MHz for the International Mobile Telecommunications (IMT-2000);
- b) that CEPT has adopted the ERC Decision (97)07 on the frequency bands for the introduction of the Universal Mobile Telecommunications System (UMTS) that designates the frequency bands 1900 - 1980 MHz, 2010 - 2025 MHz and 2110 - 2170 MHz to terrestrial UMTS applications and indicates that the satellite component of UMTS can be accommodated in the bands 1980 - 2010 MHz and 2170 - 2200 MHz;
- c) that ERC Decision (00)01 indicated that the entirety of the 155 MHz shall be made available for terrestrial UMTS and other terrestrial systems included in the IMT-2000 family;
- d) that WRC-2000 identified additional frequency bands for IMT-2000 in RR 5.384A of the Radio Regulations applying to the Mobile Service together with Resolutions 223 and 225 and in RR 5.317A together with Resolution 224;
- e) that there is a need to facilitate IMT-2000/UMTS interoperability throughout Europe;
- f) that the bands 880 - 915 MHz, 925 - 960 MHz, 1710 - 1785 MHz and 1805 - 1880 MHz are currently used for GSM (2<sup>nd</sup> generation terrestrial mobile system) in most CEPT member countries and are expected to be used by terrestrial IMT-2000/UMTS in the longer term;
- g) that the band 2500 - 2690 MHz is currently used for the fixed and/or mobile service in most CEPT member countries;
- h) that there will be differences in the demand for IMT-2000/UMTS spectrum across Europe which could lead to an offset in timescales concerning the introduction of the additional band 2500 - 2690 MHz for IMT-2000/UMTS;
- i) that CEPT supports the development by ITU-R of globally harmonised frequency arrangements for the bands identified for IMT-2000;
- j) that ECC Report 45 addresses sharing and adjacent band compatibility studies between IMT-2000/UMTS in the band 2500 - 2690 MHz and other services;
- k) that co-ordination may be required on a national basis to protect the Radioastronomy Service (see RR.4.6, RR.5.30, RR.5.149, RR5.340)
- l) that ECC Decision (02)06 designated the entire frequency band 2500 - 2690 MHz to IMT-2000/UMTS systems and the sub-band 2520 - 2670 MHz for use by terrestrial IMT-2000/UMTS systems;
- m) that ECC Decision (02)06 decided that detailed spectrum arrangements for the frequency band 2500 - 2690 MHz as well as the utilisation of the sub-bands 2500 - 2520 MHz and 2670 - 2690 MHz shall be decided in an additional ECC Decision by the end of 2004;

- n) that according to ECC Decision (02)06 the frequency band 2500 – 2690 MHz should be made available for use by IMT-2000/UMTS systems by 1 January 2008, subject to market demand and national licensing schemes;
- o) that to facilitate global roaming it is important to have harmonised spectrum, licensing and circulation arrangements for the use of IMT-2000 terminals;
- p) that Mandate No. 5 from the EC requires CEPT to develop and adopt the measures necessary to ensure a harmonised and efficient use of the frequency band 2500-2690 MHz for IMT-2000/UMTS;
- q) that flexibility should be afforded to administrations to determine, at a national level, the availability of the 2500 – 2690 MHz band for IMT-2000/UMTS in order to meet their specific deployment of existing systems (e.g. fixed service, MMDS, ENG-OB), market demand and other national considerations;
- r) that the MSS including the satellite component of IMT-2000 will need the following bands for their development and in order to support new innovative MSS services:
- 1518 – 1525 MHz / 1670 – 1675 MHz
- as well as existing pairings at:
- 1525 – 1559 MHz / 1626.5 - 1660.5 MHz
  - 1610 - 1626.5 MHz / 2483.5 – 2500 MHz
  - 1980 – 2010 MHz / 2170 - 2200 MHz;



## DECIDES

1. that the frequency band 2500 – 2690 MHz is designated for terrestrial IMT-2000/UMTS systems;
2. that Administrations shall make provisions to allow for the harmonised utilisation of spectrum in the frequency band 2500 – 2690 MHz for terrestrial IMT-2000/UMTS, as identified in **Annex 1** to this Decision;
3. that the frequency band in decides 1 is available for terrestrial IMT-2000/UMTS systems as from 1 January 2008, subject to market demand and national licensing schemes;
4. that the date for implementation of this Decision shall be XX March 2005;
5. 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:*

- 1 The following Members have a derogation to implement this Decision until xx yy zzzz:
- 2 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 IN THE BAND 2500 - 2690 MHz**

1. The frequency band 2500 – 2570 MHz is paired with 2620 – 2690 MHz for FDD operation with the mobile transmit within the lower band and base transmit within the upper band.
2. Administrations may assign the frequency band 2570 – 2620 MHz either for TDD or for FDD downlink (external). Any guard bands required to ensure adjacent band compatibility at 2570 MHz and 2620 MHz boundaries will be decided on a national basis and taken within the band 2570 – 2620 MHz.
3. Assigned blocks shall be in multiple of 5.0 MHz.
4. The upper and lower frequency edges of FDD uplink and downlink blocks are specified in Annex 2
5. For 5 MHz UTRA FDD, the block edge frequency is defined with an offset of 2.5 MHz from the nearest carrier centre frequency
6. For other IMT-2000 radio interface, the block edge is to be defined on a case by case basis depending on receiver and transmitter characteristics of the radio interface in adjacent channels

**ANNEX 2:**

**ALTERNATIVE 1: IMT-2000/UMTS CHANNELLING ARRANGEMENTS BLOCKS IN THE BAND 2500 - 2690 MHz**

2500 MHz	2505 MHz	2510 MHz	2515 MHz	2520 MHz	2525 MHz	2530 MHz	2535 MHz	2540 MHz	2545 MHz	2550 MHz	2555 MHz	2560 MHz	2565 MHz	2570 MHz	2575 MHz	2580 MHz	2585 MHz	2590 MHz	2595 MHz	2600 MHz	2605 MHz	2610 MHz	2615 MHz	2620 MHz	2625 MHz	2630 MHz	2635 MHz	2640 MHz	2645 MHz	2650 MHz	2655 MHz	2660 MHz	2665 MHz	2670 MHz	2675 MHz	2680 MHz	2685 MHz	2690 MHz
UL 01	UL 02	UL 03	UL 04	UL 05	UL 06	UL 07	UL 08	UL 09	UL 10	UL 11	UL 12	UL 13	UL 14	TDD*										DL 01	DL 02	DL 03	DL 04	DL 05	DL 06	DL 07	DL 08	DL 09	DL 10	DL 11	DL 12	DL 13	DL 14	
FDD Uplink Blocks														FDD Downlink Blocks																								

\*Any guard bands required to ensure adjacent band compatibility at 2570 MHz and 2620 MHz boundaries will be decided on a national basis and taken within the band 2570 – 2620 MHz.

**ALTERNATIVE 2: IMT-2000/UMTS CHANNELLING ARRANGEMENTS BLOCKS IN THE BAND 2500 - 2690 MHz**

2500 MHz	2505 MHz	2510 MHz	2515 MHz	2520 MHz	2525 MHz	2530 MHz	2535 MHz	2540 MHz	2545 MHz	2550 MHz	2555 MHz	2560 MHz	2565 MHz	2570 MHz	2575 MHz	2580 MHz	2585 MHz	2590 MHz	2595 MHz	2600 MHz	2605 MHz	2610 MHz	2615 MHz	2620 MHz	2625 MHz	2630 MHz	2635 MHz	2640 MHz	2645 MHz	2650 MHz	2655 MHz	2660 MHz	2665 MHz	2670 MHz	2675 MHz	2680 MHz	2685 MHz	2690 MHz
UL 01	UL 02	UL 03	UL 04	UL 05	UL 06	UL 07	UL 08	UL 09	UL 10	UL 11	UL 12	UL 13	UL 14	FDD Downlink (External)*										DL 01	DL 02	DL 03	DL 04	DL 05	DL 06	DL 07	DL 08	DL 09	DL 10	DL 11	DL 12	DL 13	DL 14	
FDD Uplink Blocks														FDD Downlink Blocks																								

\*Any guard bands required to ensure adjacent band compatibility at 2570 MHz and 2620 MHz boundaries will be decided on a national basis and taken within the band 2570 – 2620 MHz.