



# ECC Decision (02)05

The designation and availability of frequency bands for railway purposes in the 876 - 880 MHz and 921 - 925 MHz bands

**approved 5 July 2002**

amended 26 June 2009

amended 9 December 2011

## **EXPLANATORY MEMORANDUM**

### **1 INTRODUCTION**

This ECC Decision addresses the use of the bands 876-880 MHz and 921-925 MHz, which are planned for railway operational applications on a European wide basis.

These systems will support railway operations and especially those in accordance with the EC Directive on the Interoperability of High Speed railway networks 1996/48/EC and the EC Directive 1999/569/EC concerning frequencies for railways.

### **2 BACKGROUND**

This ECC Decision covers exclusively the designation and especially the availability of frequency bands for duplex operation, single frequency simplex operation and frequency planning for railways. This means the relevant bands should be designated in the national frequency usage tables and should be made available by the administrations. As the railway equipment currently on the market is designed to cover the frequency band 876-915 and 921-960 MHz, additional designations may be made on a national basis. Possibility for a GSM-R extension on a national basis into the bands 873-876 MHz and 918-921 MHz is given in ECC/DEC/(04)06 on the availability of frequency bands for the introduction of Wide Band Digital Land Mobile PMR/PAMR in the 400 MHz and 800/900 MHz bands.

The current software controlled radio equipment technology offers the flexibility with regard to different frequency availability situations within the CEPT member countries, which allows easily a European frequency planning.

DMO (Direct Mode Operation) is an additional simplex service for terminals operating in a GSM-R network. Information regarding the compatibility of UIC-DMO with GSM-R, TETRA and E-GSM can be found in ERC Report 86 of June 2000 ("Adjacent band compatibility of UIC direct mode with UIC GSM and 900 MHz TETRA – An analysis completed using a Monte Carlo based simulation tool").

To achieve the aim of taking a new step towards harmonisation and implementation of frequency spectrum for Railway Operational Applications, it has been decided to develop this Decision. The harmonisation on a European Basis would ease the implementation of Directives 1999/5/EC (the R&TTE Directive), 1996/48/EC (Interoperability of high speed railway networks), 2001/16/EC (Interoperability of conventional railway networks) and 1999/569/EC (Frequencies for railway operations).

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

The allocation or designation of frequency bands for use by a service or system under specified conditions in CEPT member countries is laid down by law, regulation or administration action. It is considered necessary to designate and implement frequency bands for Railway Operational systems. Only the real availability of an appropriate amount of radio spectrum and not only the designation within the national frequency usage tables encourage manufacturers and operators to make the necessary investments in this radio communication technology. A commitment by CEPT member countries to implement an ECC Decision will provide a clear indication that the required frequency bands will be made available on time and on a European-wide basis.

**ECC DECISION OF 5 JULY 2002, AMENDED 26 JUNE 2009, AMENDED 9 DECEMBER 2011 ON THE DESIGNATION AND AVAILABILITY OF FREQUENCY BANDS FOR RAILWAY PURPOSES IN THE 876-880 MHz AND 921-925 MHz BANDS (ECC/DEC/(02)05)**

“The European Conference of Postal and Telecommunications Administrations,

*considering*

- a) that railway organisations are making increasingly extensive use of radiocommunications to facilitate the managing and operating of railway traffic and increase its safety; especially in accordance with the European Rail Traffic Management System and the European Directives 1996/48/EC and 2001/16/EC;
- b) that it is essential to be able to use common railway radio equipment in different countries in a common frequency band as well as for border crossing traffic;
- c) that the advanced frequency economic digital radio system developed by the Union Internationale des Chemins de fer (UIC) should cover the international requirements without excluding national requirements for non-public radiocommunication of the railways and will replace most of the current analogue systems by 2010;
- d) that the amount of frequency spectrum required for railway purposes is different in different countries;
- e) that the introduction by the railways of this radio system will liberate frequencies presently used by railways;
- f) that multilateral/bilateral agreements on frequency coordination in border areas can have an influence on the availability of radio spectrum;
- g) that European-wide harmonised use of frequencies would ease the implementation of Directive 1999/5/EC (the R&TTE Directive);
- h) that the bands 873-876 MHz / 918-921 MHz may be used on a national basis as extension bands for GSM-R as described in ECC Decision (04)06;
- i) that ECC Report 162 on "Practical mechanism to improve the compatibility between GSM-R and public mobile networks and guidance on practical coordination" may be considered by administrations and/or operators to address interference cases between GSM-R and public mobile networks on a local/regional/national basis, taking into account the operational aspects;
- j) that GSM-R equipment complies with the harmonised European standards EN 301 502 (base stations) or EN 301 511 (mobile stations). UIC DMO equipment complies with the harmonised European standard EN 300 086 or equivalent specifications;
- k) that the ERC Recommendation ERC/REC 74-01 defines spurious emission limits for radio communication equipment;
- l) that in addition to the need for network interoperability, there is also a need for interoperability in the direct mode operation (DMO);
- m) that the systems operate in 200 kHz (within the GSM-R network) or 12.5 kHz (DMO) channel spacing;
- n) that administrations have the right to exercise frequency management which may affect the number of service suppliers, in conformity with their international trade obligations and to European Community legislation as far as EU Member States are concerned;
- o) that allocation, assignment and technical co-ordination of frequencies must be done in an objective, timely, impartial, transparent and non-discriminatory manner, and should not be more burdensome than necessary under international rules, in particular, to ensure the efficient use of frequency spectrum;
- p) that in EU/EFTA countries the radio equipment that is under the scope of this Decision shall comply with the R&TTE Directive (1999/5/EC). Conformity with the essential requirements of the R&TTE 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 R&TTE Directive.

**DECIDES**

1. that the frequency requirements for international and national railway operations shall be met within the bands;
  - 876-880 MHz (mobile station transmit) paired with 921-925 MHz (base station transmit) with a duplex separation of 45 MHz for duplex operation.

Centre frequency Mobile Tx (MHz)	Centre Frequency Base Tx (MHz)
876.2000	921.2000
876.4000	921.4000
876.6000	921.6000
876.8000	921.8000
877.0000	922.0000
877.2000	922.2000
877.4000	922.4000
877.6000	922.6000
877.8000	922.8000
878.0000	923.0000
878.2000	923.2000
878.4000	923.4000
878.6000	923.6000
878.8000	923.8000
879.0000	924.0000
879.2000	924.2000
879.4000	924.4000
879.6000	924.6000
879.8000	924.8000
880.0000 Note 1)	925.0000 Note 1)

**Note 1)**

The frequency 880.0000 MHz paired with 925.0000 MHz may be considered as guard channel to other services in adjacent bands.

- 876.000 - 876.100 MHz for direct mode operation (DMO) using single frequency mode. The frequency spacing for DMO is 12.5 kHz.

Centre frequency Mobile Tx/Rx (MHz)
876.0125
876.0250
876.0375
876.0500
876.0625

2. that these frequencies shall be made available according to requirements of the railways as soon as possible;
3. that this Decision enter into force on 9 December 2011;
4. that CEPT 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 documentation database <http://www.ecodocdb.dk> for the up to date position on the implementation of this and other ECC Decisions.