Commission for
Communications Regulation

Consultation Paper

# Wideband Digital Mobile Data services in the 420 MHz and 900 MHz bands

## Consultation Paper & Request for Expressions of Interest

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| **Document No:** | **04/107** |
| **Date:** | **28 October 2004** |

All responses to this consultation should be clearly marked:- "Reference: Submission re ComReg 04/107" as indicated above, and sent by post, facsimile, e-mail or on-line at www.comreg.ie (current consultations), to arrive on or before 17:00 hours on Friday 11th December 2004, to:

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Please note ComReg will publish all submissions with the Response to Consultation, subject to the standard confidentiality procedure.

Contents

# 1 Foreword

The availability of Broadband to support the provision of data services to the public is a key national objective. The Commission for Communications Regulation is committed to ensuring that every avenue is explored in terms of meeting this objective and has already introduced a number of initiatives including national and local area fixed wireless access licences which currently provide Broadband services to over 6,000 consumers. Growth in the take up of these services is continuing and ComReg is keen to promote yet further competition in this area and to maintain Ireland as a leading location for the development and utilisation of wireless technologies.

The proposals in this document provide the basis for increasing competition through the licensing of wideband digital mobile data services in the 420 MHz and 900 MHz bands. One of the objectives of this consultation is particularly to encourage the rollout of services in areas that are not currently adequately serviced by other technologies. ComReg believes that this would be a valuable complement to our existing initiatives in this area. We look forward to receiving your views on the proposals.

**John Doherty,**
**Chairperson.**

## 2 Introduction

Ireland is experiencing a growing demand for access to high speed data services like internet access, e-mail and audiovisual communication. Developments in technology are blurring the previously clear distinctions between different services and there is a drive from industry to compete with offerings from other sectors. For example public mobile cellular networks can now offer Push-to-Talk facilities for instant one-to-one or group communication, previously the domain of private mobile radio (PMR) or public access mobile radio (PAMR) networks. PMR and PAMR are also known under the generic title of "business radio". It is now feasible for digital PMR or PAMR networks to offer always-on IP connections, in a similar way to GPRS[1] and 3G mobile networks. There are therefore an increasing number of technological options for delivering wireless data communications. The term wideband digital mobile data services is intended to cover digital systems providing data rates of several hundred kilobits per second. These systems may be operated as self provided, self used systems or by a third party offering services to users.

The established GSM/GPRS mobile data networks provide ubiquitous coverage throughout Ireland, and overseas through roaming agreements, with typical data rates of up to 56 kbit/s. New 3G mobile networks will provide similar coverage and international roaming capabilities over the next few years but with increased data rates of up to 384 kbit/s, approaching that of fixed broadband platforms like DSL. These public cellular mobile services are ideally suited to general purpose voice and data applications where the user is in a mobile environment. Nevertheless there may be situations where specific users require more specialised data services that could be better delivered by means of a dedicated data-only mobile network. Such networks already exist in a number of European countries, using analogue-based technologies such as Mobitex, with limited data rates (typically up to 8 kbit/s). Technology evolution means that it is now possible for dedicated mobile data networks to operate at much higher speeds of up to hundreds of kbit/s or more. This consultation document describes ComReg's proposals to licence such services and seeks views on these proposals

To meet the growing demand for high speed data services ComReg is seeking to promote further competition and to facilitate new entrants into this market. The proposed new wideband digital mobile data services will be capable of relatively high-speed wireless internet access and other data communications. ComReg is acting in accordance with the General Policy Direction on Competition[2] issued by the Minister for Communications, Marine and Natural Resources in 2004 which directed ComReg to focus on the promotion of competition as a key objective particularly in the fixed and mobile markets.

[1] General Packet Radio Service, a packet data transmission service operated over cellular (GSM) networks.
[2] Directions by the Minister for Communications, Marine and Natural Resources to the Commission for Communications Regulations under Section 13 of the Communications (Regulation Act, 2002)

## 3 Proposal to licence wideband digital mobile data services

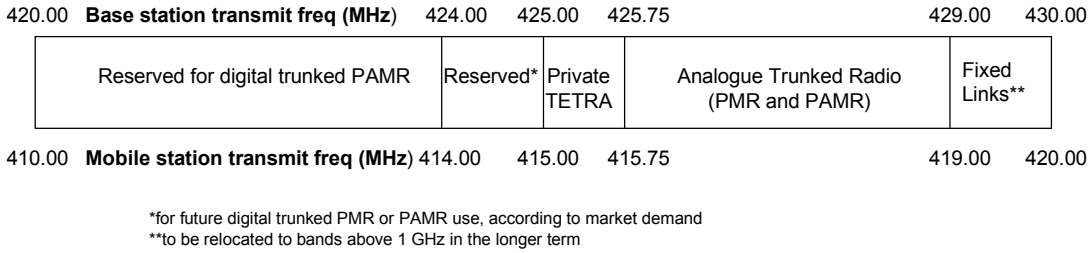
In Europe the CEPT Working Group on Frequency Management has been studying developments in business radio technologies and setting out strategies for the ongoing development of this sector taking account of trends, particularly in data applications. One result of those studies is ECC Report 25[3] which outlines a strategic plan for the development of PMR and PAMR in Europe for the period until 2013.

The Report defines Public Access Mobile Radio as "*Operator provided, commercially open networks designed for business or professional users, dedicated user groups but with no limitation on the nature or type of the user groups and no need for these to be related. Not generally intended for these groups to communicate with each other.*" The Report distinguishes PAMR from public mobile networks such as GSM and terrestrial UMTS (3G) along the following lines "*Public mobile networks are open to all and address the mass-market. The services in public land mobile networks are typically one to one voice, short messaging and data.*" Public mobile networks also offer ubiquitous coverage and service availability, seamless handover between cells with national and international roaming.

CEPT ECC Decision ECC/DEC(04)06[4], developed on the basis of recommendations from ECC Report 25 referred to above, designates the following frequency bands for wideband digital land mobile PMR/PAMR systems;

- 410 – 430 MHz and/or 450-470 MHz with a 10 MHz duplex spacing between the transmit frequencies of mobile stations and the transmit frequencies of the base stations and/or
- 870 – 876 MHz paired with 915 – 921 MHz with a 45 MHz duplex spacing between the transmit frequencies of the mobile stations and the transmit frequencies of the base stations

The 450-470 MHz band is already extensively utilised in Ireland for mobile business radio services, so is not available for wideband digital land mobile PMR/PAMR systems. The current utilisation and designation of the 410 – 430 MHz frequency range in Ireland is as follows:

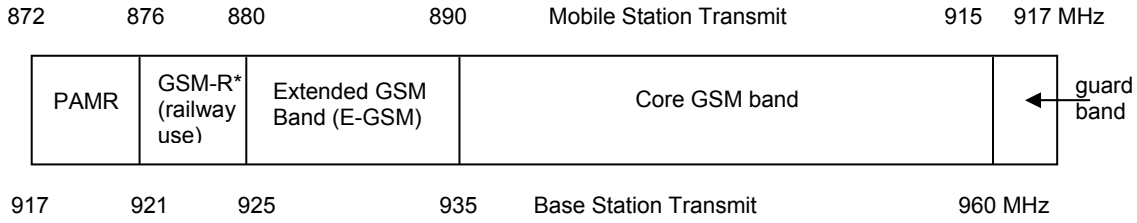



*for future digital trunked PMR or PAMR use, according to market demand
**to be relocated to bands above 1 GHz in the longer term

The lower 2 x 4 MHz was reserved for digital trunked PAMR services following a consultation in 2001[5].

[3] ECC Report 25: Strategies for the European use of frequency spectrum for PMR/PAMR Applications (available at www.ero.dk)
[4] CEPT ECC Decision ECC/DEC(04)06 on the availability of frequency bands for the introduction of Wide Band Digital Land Mobile PMR/PAMR in the 400 and 800/900 MHz bands (available at www.ero.dk).

The current utilisation of the 880 MHz to 960 MHz frequency range in Ireland is shown below:




*The GSM-R allocation is currently under consideration by ComReg.

The bands 870 - 876 and 915 – 921 MHz are not currently used in Ireland but the band 915 – 921 MHz is adjacent to the frequency band used by GSM mobile networks and there is a risk of mutual interference with GSM stations if PAMR systems were deployed in the band. Therefore, on the basis of compatibility studies carried out in CEPT[6] the lower part of the band, i.e., 915-917 MHz, is designated instead as a 'guard band'. This results in a total of 2 x 4 MHz available for assignment in the 870 - 876 and 915 – 921 MHz bands.

Therefore, in accordance with CEPT ECC Decision (04)06, ComReg has identified the following frequency ranges as available for wideband digital mobile data services:

- 410 – 414 MHz (mobile station transmit), paired with 420 – 424 MHz (base station transmit)
- 872 – 876 MHz (mobile station transmit), paired with 917 - 921 MHz (base station transmit)

In the remainder of this document these two frequency bands are referred to as the 420 MHz band and the 900 MHz band respectively.

In the light of demand for wireless data services ComReg considers that the recent emergence of wideband PAMR technologies and the implementation of CEPT ECC Decision (04)06 presents a timely opportunity to proceed with licensing wideband digital mobile data services in these bands.

**Q. 1. What is the minimum amount of spectrum that you consider necessary to provide a competitive wideband digital mobile data service in the 420 MHz and 900 MHz bands and why?**

[5] Document ODTR 01/50, "Review of Licensing of Trunked On-Site and Local Area Business Radio in the 410-430 MHz Frequency Band, Response to the Consultation" (available at www.comreg.ie).
[6] ECC Report 41 "Adjacent band compatibility between GSM and CDMA-PAMR at 915 MHz" (available at www.ero.dk).

### 3.1 Licensing Options

ComReg proposes that the frequencies in the 420 MHz and 900 MHz bands be assigned to wideband digital mobile data services as follows:

> **Proposal**: Two types of licence would be made available: one or two national licences consisting of up to 2 x 2 MHz (including guardbands) in both the 420 MHz and 900 MHz bands on the basis of justified requests; and local area licences in any remaining spectrum, each with a radius not exceeding 30 km.
>
> The licences would be for a limited term of 5 years with a review prior to the expiration of the licence based on delivery of service and whether the spectrum is required for other services. Depending upon the level of demand for licences and the amount of spectrum required by each applicant, licences would be awarded either by comparative selection or on a first-come, first-served basis.
>
> The proposed licences will be for wideband digital mobile data services, capable of providing internet access and other data communications. Typical data rates are expected to be of the order of 384 – 500 kbits/sec.

It is important that prospective licensees are aware that they would be obliged to ensure that services deployed in these bands do not cause any interference to existing services in the adjacent bands (see ECC Reports 22[7], 40[8] and 41[9] available from the ERO website at www.ero.dk). Services in the 900 MHz band will be deployed from the upper end of the band in order to ease compatibility with GSM services below 915 MHz.

Licensees will be permitted to provide interconnection or access to the PSTN or PLMN in accordance with the Access Regulations[10] and CEPT ERC Decision ERC/DEC(98)10 which states in Decides 1, "*that administrations shall allow PMR and PAMR systems operated on exclusive frequencies and in appropriate cases on frequencies shared with other PMR and PAMR users to interconnect to a public telecommunication network*." In accordance with the

[7] ECC Report 22 "The technical impact of introducing TAPS on 12.5/25kHz PMR?PAMR technologies in 380 – 400 MHz, 410 – 430 MHz and 450 – 470 MHz bands" (available at www.ero.dk).
[8] ECC Report 40 "Adjacent band compatibility between CDMA-PAMR mobile services and short range devices below 870 MHz" (available at www.ero.dk).
[9] ECC Report 41 "Adjacent band compatibility between GSM and CDMA-PAMR at 915 MHz" (available at www.ero.dk).
[10] European Communities (Electronic Communications Networks and Services)(Access) Regulations 2003 (S. I. No. 305 of 2003).

EU Regulatory Framework[11] ComReg is adopting a technologically neutral approach to this licensing regime. However it is important to note that all proposed systems must be in compliance with the EMC and R&TTE Directives[12]. Licences will be issued in accordance with the Authorisation Regulations[13].

**Q. 2. Do you agree with the proposal to offer one or two national licences of 2 x 2 MHz in both bands and local area licences for 2 x 2 MHz in the remainder of the available spectrum? If not please provide supporting arguments.**

**Q. 3. Are there any other licensing approaches that you think should be considered, and please explain why?**

**Q. 4. Are there any particular technologies that you consider would be suitable for delivery of wideband digital mobile data services in these bands? If so, please explain why.**

## 3.2 Expressions of interest

Expressions of interest are invited from anyone interested in providing wideband digital mobile data services in the 420 MHz and 900 MHz bands. If you wish to submit an

[11] Directive 2002/20/EC of the European Parliament and of the Council on the authorisation of electronic communications networks and services, ("the Authorisation Directive"), OJ 2002 L 108/21; Directive 2002/19/EC of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and services, ("the Access Directive"), OJ 2002 L 108/7; Directive 2002/21/EC Of The European Parliament And Of The Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services ("Framework Directive") OJ 2002 L 108/33; Directive 2002/22/EC of the European Parliament and of the Council on universal service and users' rights relating to electronic communications networks and services, ("the Universal Service Directive"), OJ 2002 L 108/51; and the Directive 2002/58/EC of the European Parliament and of the Council concerning the processing of personal data and the protection of privacy in the electronic communications sector, ("the Privacy and Electronic Communications Directive"), OJ 2002 L 201/37.European Communities (Electronic Communications Networks and Services)(Access) Regulations 2003 (S. I. No. 305 of 2003), European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003 (S. I. No 306 of 2003), European Communities (Electronic Communications Networks and Services)(Framework) Regulations 2003, (S. I. No. 307 of 2003), European Communities (Electronic Communications Networks and Services)(Universal Service And Users' Rights) Regulations 2003 (S. I. No. 308 of 2003).

[12] Directive 1999/5/EC Of The European Parliament and of The Council Of 9 March 1999 On Radio Equipment And Telecommunications Terminal Equipment And The Mutual Recognition Of Their Conformity O.J. 7.4.99 L 91/10 (The R&TTE Directive). Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility OJ L 139, 23.5.1989, p. 19. Directive as last amended by Directive 93/68/EEC.

[13] European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003 (S. I. No 306 of 2003).

expression of interest please provide the information requested in **Appendix C** as part of your response to this consultation. It should be noted that the submission of an Expression of Interest at this stage will not confer any priority on applicants if/when licensing commences and will not take the place of a licence application. The number of expressions of interest received will assist ComReg in designing the most appropriate procedure for the allocation of licences.

### 3.3 Licensing process

Licences under this scheme shall be issued under the Wireless Telegraphy Act 1926[14] and any appropriate Regulations. Furthermore, licensees shall be obliged to make a notification to the Commission under the terms of Regulation 4 of the Authorisation Regulations.

The licensing process will depend on the level of demand for licences and whether this exceeds the number of licences that can be accommodated in the available spectrum. ComReg is committed under the terms of the Authorisation Regulations to apply selection criteria that are objective, transparent, non-discriminatory and proportionate. The number of expressions of interest received in response to this consultation will assist in the determination the licensing process to be used. If demand exceeds supply ComReg will consider an appropriate comparative evaluation in such circumstances. Comparative evaluation provides an approach for choosing among multiple applications in accordance with pre-defined criteria.

If demand does not exceed supply, licences may be awarded on a first-come, first-served basis.

**Q. 5. What is your preference for the licensing process that should be adopted by ComReg in licensing the 420 MHz and 900MHz bands and why e.g. auction/beauty contest/first come first served?**

### 3.4 Spectrum fees

It is proposed to apply an annual spectrum fee structure to wideband digital mobile data service licences. Therefore national licence holders using 2 x 2 MHz of spectrum would incur an annual charge of €1,000 per base station. Local area licences will be subject to an annual charge of €2,000 per base station. The difference in fees takes into consideration the fact that a national licence holder will have greater start up costs than a local area licence holder.

In addition a non-refundable licence application fee will be charged on a cost recovery basis. The value of this fee will be determined once the format of the licensing process is determined. There will also be an administrative fee charged to cover the costs of processing the applications.

[14] No. 25 of 1926

**Q. 6. Do you have a view on the proposed fee levels for wideband digital mobile data services in the 420 MHz and 900 MHz bands?**

## 4 Submitting Comments

All comments are welcome, however it would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this document (the list of questions is contained in Annex B).

The consultation period will run from 28th October to 11th December 2004, during which the Commission welcomes written comments on any of the issues raised in this paper.

Having analysed and considered the comments received, ComReg will review the proposals for wideband digital mobile data services in the 420 MHz and 900 MHz bands and publish a report in January 2005 on the consultation which will, inter alia summarise the responses to the consultation.

Depending on the number of expressions of interest received and the licensing approach that is adopted, ComReg anticipates that a licensing process will commence early in 2005.

In order to promote further openness and transparency ComReg will publish the names of all respondents and make available on its website all responses to the consultation.

**Please note** ComReg will publish all submissions with the Response to Consultation, subject to confidentiality. ComReg appreciates that many of the issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful. Respondents are requested to clearly identify confidential material and if possible to include it in a separate annex to the response. Such information will be treated as strictly confidential.

## Appendix A – Legislation

**Relevant European Legislation:**

- Directive 2002/20/EC of the European Parliament and of the Council on the authorisation of electronic communications networks and services, ("the Authorisation Directive"), OJ 2002 L 108/21;
- Directive 2002/19/EC of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and services, ("the Access Directive"), OJ 2002 L 108/7;
- Directive 2002/21/EC Of The European Parliament And Of The Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services ("Framework Directive") OJ 2002 L 108/33
- Directive 2002/22/EC of the European Parliament and of the Council on universal service and users' rights relating to electronic communications networks and services, ("the Universal Service Directive"), OJ 2002 L 108/51;
- Directive 2002/58/EC of the European Parliament and of the Council concerning the processing of personal data and the protection of privacy in the electronic communications sector, ("the Privacy and Electronic Communications Directive"), OJ 2002 L 201/37.

**National Primary Legislation:**

- Communications Regulations Act, 2002 (No. 20 of 2002);
- Wireless Telegraphy Act, 1926 (No. 45 of 1926);
- The Freedom of Information Act, 1997 (as amended)

**National Transposing Legislation:**

- European Communities (Electronic Communications Networks and Services)(Access) Regulations 2003 (S. I. No. 305 of 2003);
- European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003 (S. I. No 306 of 2003);
- European Communities (Electronic Communications Networks and Services)(Framework) Regulations 2003, (S. I. No. 307 of 2003);
- European Communities (Electronic Communications Networks and Services) (Universal Service And Users' Rights) Regulations 2003 (S. I. No. 308 of 2003);
- European Communities (Electronic Communications Networks and Services)(Data Protection and Privacy) Regulations 2003, (S.I. 535 of 2003).

## Appendix B – Consultation Questions

### List of Questions

**Q. 1. What is the minimum amount of spectrum that you consider necessary to provide a competitive wide band digital mobile data service in the 420 MHz and 900 MHz bands and why?**

**Q. 2. Do you agree with the proposal to offer one or two national licences of 2 x 2 MHz in both bands and local area licences for 2 x 2 MHz in the remainder of the available spectrum? If not please provide supporting arguments.**

**Q. 3. Are there any other licensing approaches that you think should be considered, and please explain why?**

**Q. 4. Are there any particular technologies that you consider would be suitable for delivery of wide band digital systems in these bands? If so, please explain why.**

**Q. 5. What is your preference for the licensing process that should be adopted by ComReg in licensing the 420 MHz and 900MHz bands and why e.g. auction/beauty contest/first come first served?**

**Q. 6. Do you have a view on the proposed fee levels for wideband digital mobile data services in the 420 MHz and 900 MHz bands?**

## Appendix C – Expressions of Interest

Expressions of interest are invited from anyone interested in providing wideband digital mobile data services in the 420 MHz and 900 MHz bands. These should include as a minimum the information listed in points 1 – 7 below and a clear reference should be made to these points in the response.

1. a description of the services to be provided, including proposed maximum and committed data rates

2. the amount of spectrum required, with supporting calculations based on the services to be provided

3. the type of equipment the applicant intends to use

4. the network architecture proposed (e.g. point to multipoint or mesh)

5. the location of the central base station (or central point of a mesh network) and the proposed coverage area

6. the target customer base (e.g. residential, small business, etc)

7. the technical characteristics of the system (e.g. whether time division of frequency division duplex, channelling arrangements, tuning range)