



Commission for  
**Communications Regulation**

## Consultation Paper

### **26 GHz Fixed Service Band – Spectrum Rationalisation**

|                     |                      |
|---------------------|----------------------|
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All responses to this consultation should be clearly marked:-  
“Reference: Submission re ComReg 05/46” as indicated above,  
and sent by post, facsimile, e-mail or on-line at [www.comreg.ie](http://www.comreg.ie)  
(current consultations), to arrive on or before 5pm on 25 July  
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Please note ComReg will publish all respondents submissions  
with the Response to this Consultation, subject to the provisions  
of ComReg’s guidelines on the treatment of confidential  
information – ComReg 05/24

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## **1 Foreword**

The Commission for Communications Regulation (ComReg) is responsible for the efficient management and use of the radio spectrum, one of Ireland’s key natural resources. To this end ComReg adopts a strategic approach in its management, enabling the efficient use of the spectrum resource through appropriate licensing regimes while minimising interference and unnecessary regulatory intervention.

A key aspect of this strategy is to continuously review the use of spectrum to ensure that its potential benefits, both economic and social, are being maximised. This consultation follows an internal review of the 26 GHz band and is presenting options for the rationalisation of the band. This rationalisation is proposed in order to provide greater flexibility in how the band can be employed to meet the needs of growing data and telecommunications networks, to ensure the efficient use of the spectrum and to meet the requirements of stakeholders in a timely manner. Indirectly the benefits of efficient networks and the flexibility being offered to operators should be passed on to consumers in the form of improved services and reduced tariffs.

Responses are invited from all sectors on the options presented here for the rationalisation of the 26 GHz band and ComReg looks forward to developing a comprehensive solution for the use of this important resource.

**Isolde Goggin,  
Chairperson.**

## 2 Executive Summary

The 26 GHz band (24.5 – 26.5 GHz) is currently used by telecommunications operators on a limited basis for the provision of both network access and network infrastructure. A total of 2 x 896 MHz is available in the 26 GHz band; 2 x 84MHz is currently licensed on a national basis for Fixed Wireless Point to Multipoint Access (FWPMA) and 2 x 168 MHz is individually licensed at various locations for Point to Point radio links in support of network infrastructure.

An internal review of the 26 GHz band was conducted by ComReg in early 2005 and has highlighted the following:

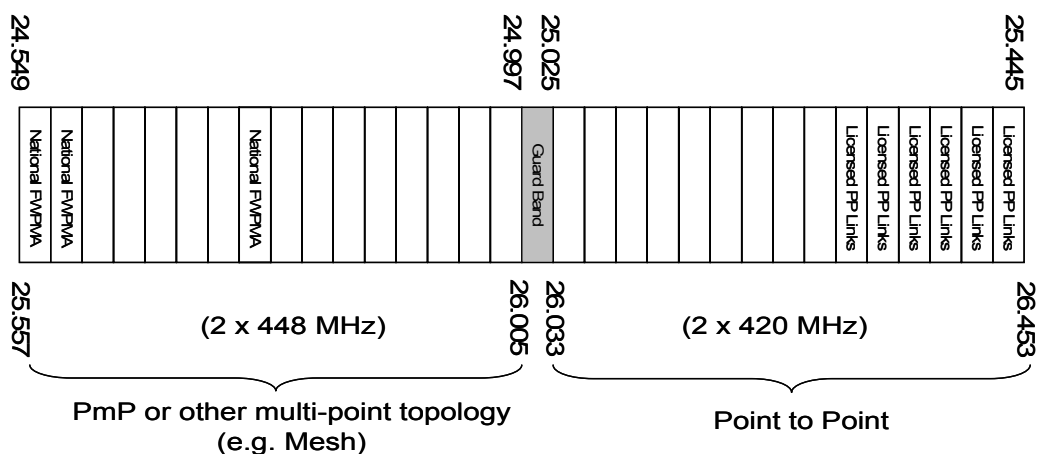
- (1) Further flexibility is required in the band;
- (2) There are limited deployments to date in the band;
- (3) Further demand exists for spectrum to facilitate access networks;
- (4) Technology and network developments require a flexible approach to spectrum assignments in the band.

The outcome of this review is a need to rationalise the way in which the frequency band is used. The objective of a rationalisation of spectrum in the band is to ensure flexibility in line with the requirements of our stakeholders and to ensure the availability of this resource to a range of services and applications whilst ensuring the efficient use of the spectrum.

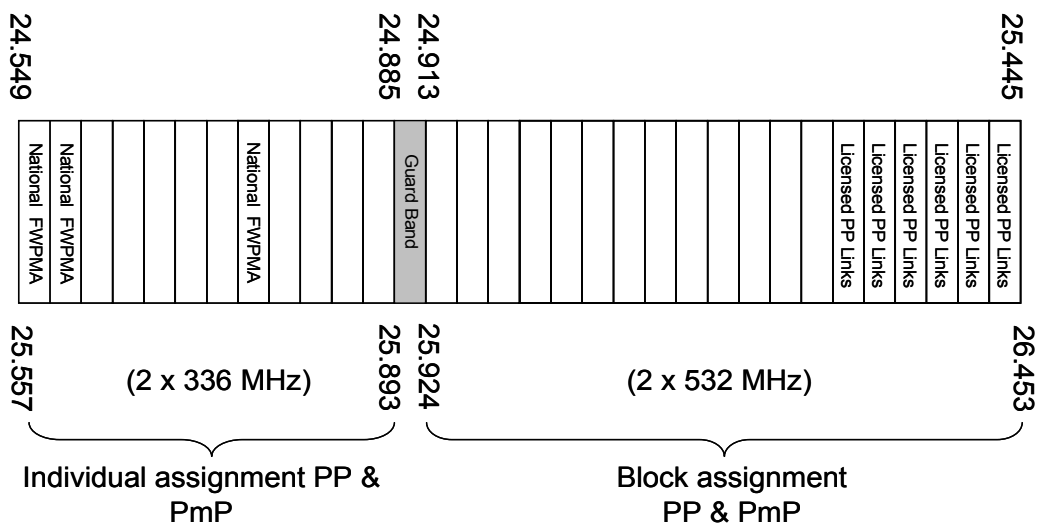
This consultation seeks the views of interested parties on the future structure of the 26 GHz band and to assess the needs of network providers in order to optimise the availability of spectrum in this band.

Three options are presented in this document for the future structure of the band and comments are sought on these options. For clarity, the sub-divisions of the band in the following diagrams represent 28MHz channels of paired spectrum and the current spectrum use is indicated in the relevant channels.

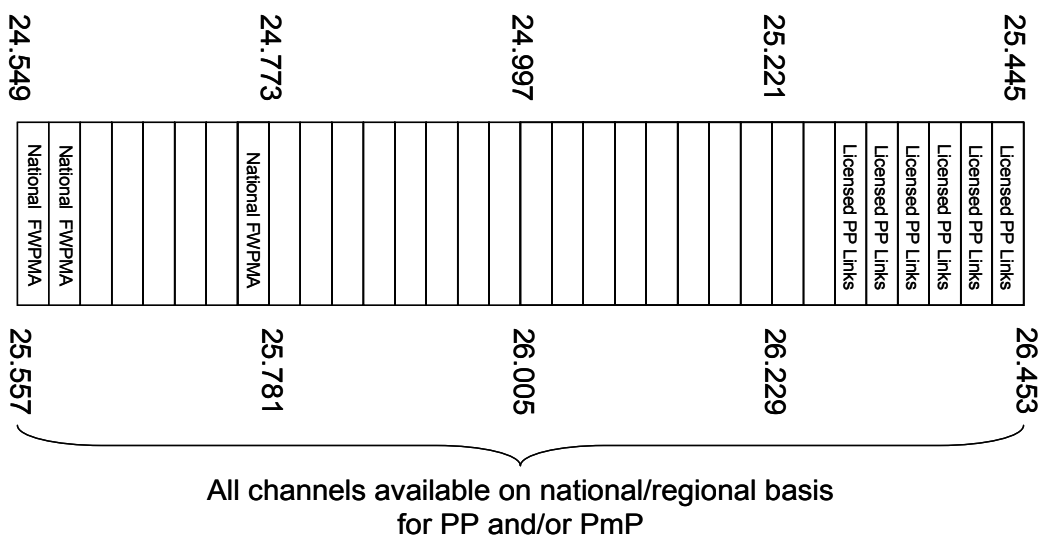
**Option 1:** Divide frequencies in the band between point-to-multipoint (PmP) systems and point-to-point (PP) systems;



**Option 2:** Divide frequencies in the band between individual frequency assignments and block frequency assignments on a national or regional basis;



**Option 3:** Open the entire band for national or regional spectrum block assignment, earmarking it for future secondary trading initiatives.



Responses are invited from all sectors on the options presented here for the rationalisation of the 26 GHz band.

### 3 Introduction

Currently fixed point-to-point and point-to-multipoint links, particularly at frequencies above 1 GHz, are widely used in Ireland for the provision of communications network infrastructure and to a lesser extent for providing communications network access to end-users (i.e. the last mile). These networks and systems are primarily used by telecommunications operators, mobile phone operators, internet service providers, utilities and the emergency services to provide transmission networks which are cheaper and quicker to roll-out than fibre based networks.

Generally, networks are deployed in the Fixed Service as either highly directional point-to-point systems (PP) or broadcast-like point-to-multipoint systems (PmP). The frequency bands between 3 and 11GHz are suitable for long distance, high capacity ‘backhaul networks’. The frequency bands above 12GHz are more suited to shorter, medium/low capacity ‘access networks’, although not exclusively, providing network connectivity between the network core (often via a backhaul network) and a network access node (e.g. a GSM base-station) or end-user.

A review of the 26 GHz band was indicated in ComReg document 05/01: *‘Preparing the Radio Spectrum Management Strategy for 2005 – 2007’*. ComReg conducted this review in early 2005 and examined the national utilisation of the band, the structure and utilisation of the band internationally and technology developments within the sector. The review highlighted the following points, the outcome of which is that the use of spectrum in the 26 GHz band has now been identified for rationalisation:

- (1) Further flexibility required in the designation of spectrum for applications;
- (2) There are limited deployments to date in the band;
- (3) With the continued rollout of 2G and 3G mobile networks and the growth of new and existing service providers building out communications networks there is further demand for spectrum to facilitate access networks as described above;
- (4) Technology and network developments require a flexible approach to spectrum assignments in the band.

The objective of a rationalisation of spectrum in the 26 GHz band is to ensure flexibility in line with the requirements of our stakeholders and to ensure the availability of this resource to a range of services and applications whilst ensuring the efficient use of the spectrum.

This consultation seeks the views of interested parties on the future structure of the 26 GHz band and to assess the needs of network providers in order to optimise the availability of spectrum in this band. While this document presents specific options for the future structure of the 26 GHz band ComReg would be pleased to receive suggestions on alternative options which could be considered during this rationalisation.

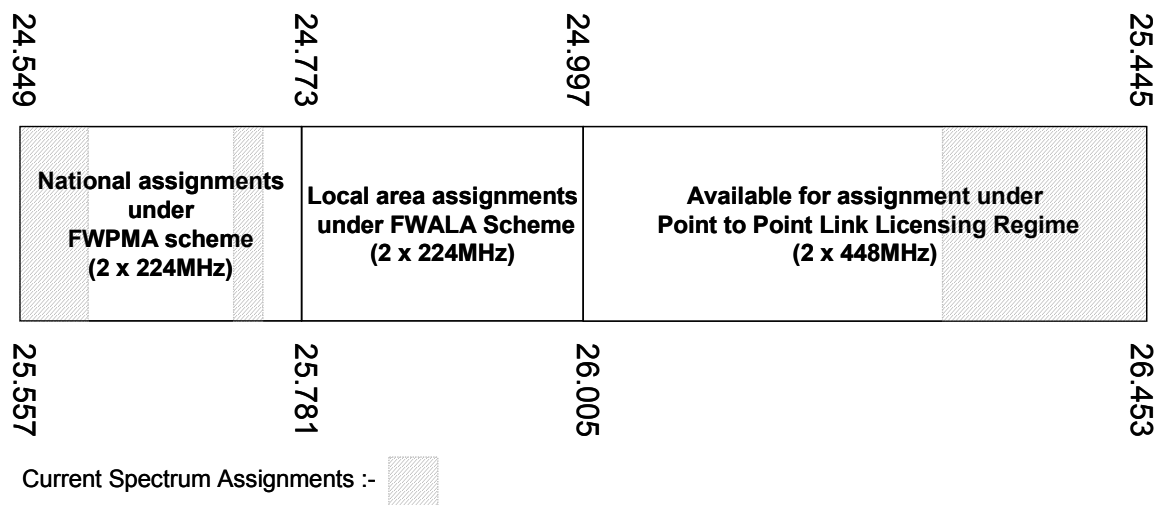
### 3.1 The Current Structure of the 26 GHz Band:

The current 26 GHz band plan is based on CEPT<sup>1</sup> Recommendation ERC T/R 13-02E, Annex B (available from [www.ero.dk](http://www.ero.dk)).

In 2000 the Office of the Director of Telecommunications Regulation (ODTR) awarded four national licences for Fixed Wireless Point to Multipoint Access (FWPMA) in the 26 GHz band to Chorus Communications, eircom, Esat Telecom and Formus Communications following a beauty contest.

In March 2001 Formus Communications withdrew from the market as a result of financial difficulties and its licence was subsequently revoked. In December 2002 ComReg upheld a proposal by the Director (ODTR) to revoke Chorus Communications’ licence to provide FWPMA services, made following a review of the three remaining FWPMA licences (document 02/120 refers). This licence was revoked in March 2003.

In February 2002, the ODTR (now ComReg) conducted a public consultation on Fixed Wireless Access (FWA) (document 02/19 refers). This consultation included a review of the structure of the 26 GHz band. In responding to this consultation (see document 02/49) the ODTR restructured the 26 GHz band and following the development of the Fixed Wireless Access Local Area (FWALA) scheme (document 03/34 refers) the band was structured as shown in Figure 1.



**Figure 1 – Current Designations and Current Assignments in the 26 GHz Band**

Nevertheless recent developments in technology, trends in the industry and proposals from wireless access operators all indicated that greater flexibility in the use of the spectrum in the 26 GHz band would have benefits in terms of the efficient use of the spectrum and in meeting the requirements of users and potential users of the band. Therefore a review of the band has been conducted and options are presented in this

<sup>1</sup> European Conference of Postal and Telecommunications Administrations

document on the future structure of the band.

At the time of publication of this consultation document two national FWPMA licences occupying in total 2 x 84 MHz of spectrum are in place in the lower part of the 26 GHz bands and 106 fixed point-to-point network infrastructure links have been individually licensed across 2 x 168 MHz in the upper part of the 26 GHz bands. No FWALA licences have been issued to date in the 26 GHz band.



## 4 Proposals for Rationalisation of the 26 GHz Band

This section details a number of options that ComReg is considering to rationalise the use of the spectrum in the 26 GHz band while trying to maximise the usefulness of the band in the most spectrally efficient manner. While a number of options have been presented, these options are non-exhaustive and ComReg welcomes any additional options or comments beyond those presented in this document. All of the presented options and indeed any rationalisation of the 26 GHz band shall be based on the band plan detailed in CEPT Recommendation ERC T/R 13-02E, Annex B.

For clarity, the sub-divisions of the band in the diagrams presented in the following options represent 28MHz channels of paired spectrum in accordance with the channelling plan in Recommendation ERC T/R 13-02E, Annex B and the current spectrum use is indicated in the relevant channels (excluding proposed guard bands).

### 4.1 Option 1:

This option proposes splitting the band by topology (see Figure 2). The lower part of the band is designated for point-to-multipoint or other multipoint systems (e.g. mesh). The upper part of the band is designated for use by point-to-point systems only. Both multipoint and point-to-point systems may be employed to provide network access or end-user access. Licences will be issued on a case-by-case basis. Multipoint systems will be licensed either under the FWALA regulations<sup>2</sup> for end-user access systems or the Radio Link Licence regulations<sup>3</sup> for network access systems. Point to Point systems will be licensed under the Radio Link Licence regulations for both public and network access systems.

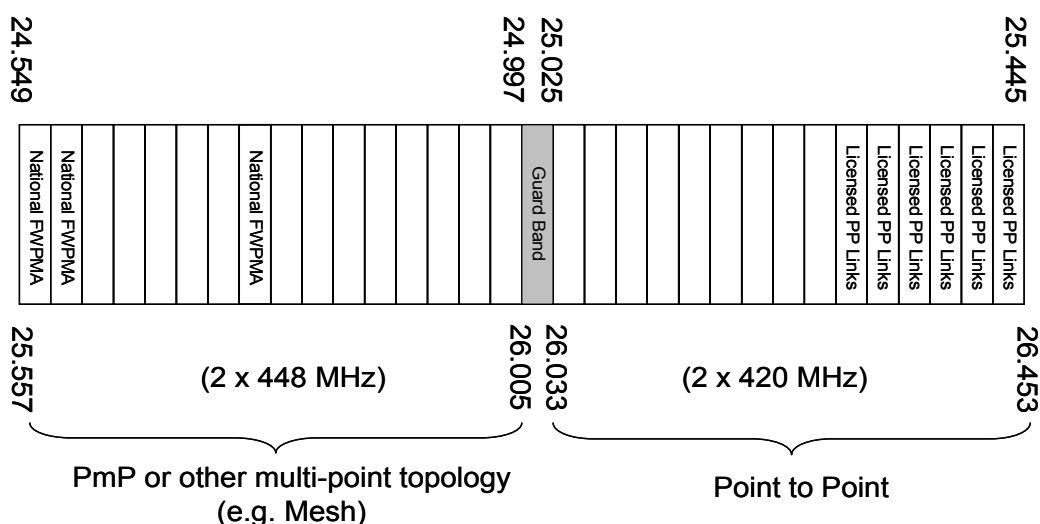


Figure 2 – Option 1

<sup>2</sup> SI 79 of 2003 as amended; Guidelines document: ComReg 03/34 – See Appendix A

<sup>3</sup> SI 319 of 1992; Multipoint Guidelines to be developed; Point to Point Guidelines document: ComReg 98/14R3 - See Appendix A

Current FWPMA licensees will retain their national licences for the provision of broadband services until the expiry of those licences. The spectrum assigned to the national FWPMA licensees will be reviewed prior to the expiry of the licences with a view to including it, at expiry, within the new structure presented here.

An advantage of this option is that it can be implemented in the shortest timescale as regulations are in place to facilitate the proposals. In addition it would satisfy the immediate demand for spectrum. However, this option may not offer the flexibility required by users of the band and it may not be spectrally efficient where operators wish to deploy both point-to-point and point-to-multipoint systems in the one network.

The topologies proposed in this option here are in-line with the existing deployed topologies and should therefore not introduce any new specific coordination considerations.

ComReg is of the view that the proposed split in the band between point-to-point and point-to-multipoint topologies in the band is such that approximately four dense networks could be supported on each topology in any given area.

**Q. 1. What is your opinion on the proposed option 1?**

**Q. 2. What is your view on the amount of spectrum being made available by this option for Point-to-Point and Multipoint systems respectively?**

#### **4.2 Option 2:**

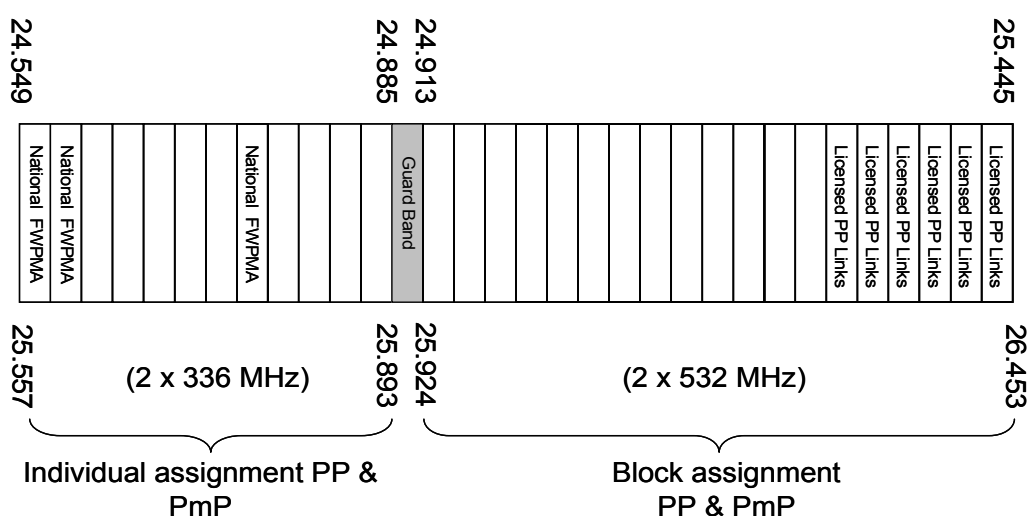
This option proposes dividing the band into either individual assignments or block assignments (see Figure 3). The lower part of the band will be used for the licensing of both point-to-point systems and point-to-multipoint systems (incl. other multipoint systems) on a case-by-case basis. In this part of the band ComReg will proceed with individual spectrum assignments in response to applications on a first-come, first-served basis. This part of the band is intended to satisfy the 26 GHz spectrum needs of operators requiring only occasional licences. Multipoint systems will be individually licensed either under the FWALA regulations for end-user access systems or the Radio Link Licence regulations for network access systems. Point to Point systems will be licensed under the Radio Link Licence regulations for both public and network access systems.

The upper part of the band will be reserved for block assignments<sup>4</sup> of spectrum on a national or regional basis. This approach is intended to satisfy the 26 GHz spectrum

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<sup>4</sup> Block assignment should be interpreted as an operator being assigned one or more adjacent channels of spectrum on a national/regional basis. The assigned block of spectrum can then be utilised by the operator, in accordance with general technical conditions imposed by ComReg in the interest of avoiding harmful interference and the efficient use of the spectrum, without the requirement of an individual licence for each deployment.

requirements of high-volume users. ComReg considers 84MHz (i.e. three 28MHz channels) of paired spectrum an appropriate amount of spectrum to be made available per licensed spectrum block. It is ComReg’s view that this amount of spectrum will be sufficient for the deployment of a point-to-multipoint network with a limited number of point-to-point links in the same area or a dense network of primarily point-to-point links with various bandwidth links deployed (7MHz, 14MHz and 28MHz). Operators assigned a block of spectrum either nationally or regionally will do their own frequency planning including the sharing of the same spectrum between point-to-point systems and multipoint systems where the operator decides to deploy multiple topologies. This approach is intended to reduce the administrative burden on the operator of applying for individual licences for each deployment and also to facilitate the most efficient use of the spectrum.



**Figure 3 – Option 2**

Guard bands will be required between adjacent licensed spectrum blocks. Guard bands may be implemented as fixed ‘no-go’ channels of spectrum between licensed users and generally if the worst case is assumed no coordination at all will be required between adjacent users (e.g. a fixed 28MHz channel of paired spectrum between adjacent blocks). This approach while definitive is not the most spectrally efficient. Guard bands may also be implemented within the licensed spectrum block by mutual frequency coordination between adjacent operators thus maximising the use of the spectrum resource. Another possible implementation is the use of a ‘block-edge-mask’ which defines a profile in terms of transmitter emissions at the licensed block edge minimising the potential for interference between adjacent blocks. An instance where this mask is exceeded then triggers a coordination activity between the adjacent operators.

Assignment of blocks of spectrum on a national or regional basis may require the development of new regulations and a new fee structure under the WT Act<sup>5</sup>.

<sup>5</sup> Wireless Telegraphy Act 1926 – See Appendix A

Current licensees will retain their licences until the expiry of those licences. At that time a review will be conducted with a view to including these licences in the framework presented in this option.

This option introduces greater flexibility in assignments facilitating the deployment of different technologies in the same spectrum. In addition, while retaining spectrum for individual assignments, block assignments of spectrum to volume users will promote greater spectrum efficiency in the deployment of dense radio networks in the 26 GHz band and reduce the administrative burden of individual licensing.

This option proposes overlaying individual assignments at the lower end of the band where two national licences are still in force and overlaying block assignments in the upper part of the band where individual licences are currently being issued. ComReg considers this to be consistent with the efficient use of the spectrum as the coordination of individual spectrum assignments with established networks such as the deployed FWPMA systems will be more efficient where ComReg retains the individual channel assignment function. In addition it is anticipated that the licensees currently holding individual point-to-point licences will be interested in the assignment of spectrum blocks where the frequency planning of the network within the licensed block is a matter for the licensee.

ComReg is of the view that national spectrum block assignments to volume users will provide advantages in terms of efficient network roll-out, equipment inventories and reduced coordination required with other operators. A regional approach, while introducing a requirement for inter-operator coordination at region borders, may provide greater flexibility for provision of localised networks.

- Q. 3. What is your opinion on the proposed option 2?**
- Q. 4. Would you be interested in spectrum, in this band, assigned on a case-by-case basis or by block assignment?**
- Q. 5. Should block assignments be made available on a national basis or a regional basis? Please give reasons for your answer.**
- Q. 6. What is your view on the amount of spectrum being made available by this option for individual assignment and for block assignment respectively?**
- Q. 7. What is your view on the requirement for guard bands between adjacent operators licensed with either national or regional spectrum block assignments of spectrum? How should guard bands be implemented where necessary?**
- Q. 8. Focussing on the efficient use of the spectrum, what is your view on the proposed 84MHz (i.e. three 28MHz channels) of paired spectrum which would, under this option, be made available to an operator as a block assignment?**
- Q. 9. What is your view on a spectrum fee structure for national/regional block assignments?**

### **4.3 Option 3:**

This option proposes making the entire band available for block assignment on a national or regional basis (see Figure 4). Assigned spectrum can be used by the licensee for the purposes of Point-to-Point and/or Point-to-Multipoint deployments. In principle block assignments will be for the provision of end-user and/or network access. Guard bands will be required between adjacent licensees and may be implemented in a number of ways as detailed in Option 2.

Current licensees will retain their licences until the expiry of those licences. Prior to expiry a review will be conducted with a view to including these licences in the framework presented here.

ComReg will be seeking opportunities to liberalise specific bands and services in the future and the 26 GHz band is being considered for future secondary trading initiatives. However, some aspects of spectrum liberalisation and change of use will depend on revision of the primary legislation (Wireless Telegraphy Act 1926).



## 5 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 consultation period will run from 23 June 2005 to 25 July 2005 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 26 GHz Spectrum Rationalisation and publish a report in August 2005 on the consultation which will, *inter-alia* summarise the responses to the consultation.

In order to promote further openness and transparency ComReg will publish all respondents' submissions to this consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

### **Please note**

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.

As it is ComReg's policy to make all responses available on its web-site and for inspection generally, respondents to consultations are requested to clearly identify confidential material and place confidential material in a separate annex to their response.

Such Information will be treated subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

## Appendix A – Legislation

Wireless Telegraphy Act 1926;

S.I. No. 319 of 1992: Wireless Telegraphy Act, 1926. Wireless Telegraphy (Radio Link Licence) Regulations, 1992;

S.I. No. 287 of 1999: Wireless Telegraphy Act, 1926. Wireless Telegraphy (Fixed Wireless Point to Multipoint Access Licence) Regulations, 1999;

S.I. No. 79 of 2003: Wireless Telegraphy (Fixed Wireless Access Local Area Licence) Regulations, 2003.



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