



Commission for
Communications Regulation

Response to Consultation

Release of Additional Spectrum in the 10 GHz Band

Including possible use of the band 10.0 GHz to 10.154 GHz for fixed, mobile or radiolocation services

Document No:	09/36
Date:	30 April 2009

This response to consultation is not a binding legal document and also does not contain legal, commercial, financial, technical or other advice. The Commission for Communications Regulation is not bound by it, nor does it necessarily set out the Commission's final or definitive position on particular matters. To the extent that there might be any inconsistency between the contents of this document and the due exercise by it of its functions and powers, and the carrying out by it of its duties and the achievement of relevant objectives under law, such contents are without prejudice to the legal position of the Commission for Communications Regulation. Inappropriate reliance ought not therefore to be placed on the contents of this document.

An Coimisiún um Rialáil Cumarsáide

Commission for Communications Regulation

Abbey Court Irish Life Centre Lower Abbey Street Dublin 1 Ireland

Telephone +353 1 804 9600 Fax +353 1 804 9680 Email info@comreg.ie Web www.comreg.ie

Contents

1 Foreword..... 3

2 List of Respondents 4

3 Introduction..... 5

4 Consultation Issues 6

 4.1 ADDITIONAL SPECTRUM IN THE 10.5 GHz FWALA BAND 6

 4.2 RELEASE OF ADDITIONAL SPECTRUM BETWEEN 10.000 – 10.154 GHz..... 7

 4.2.1 *Possible utilisation of 10.000 – 10.154 GHz and equipment availability*..... 8

 4.2.2 *Possible licensing options* 9

 4.2.3 *Band Plan options* 10

 4.2.4 *Geographical Scaling* 11

 4.2.5 *FDD or TDD usage* 11

 4.2.6 *ComReg's position*..... 12

5 Next Steps 13

1 Foreword

In its current Spectrum Management Strategy Statement¹, the Commission for Communications Regulation ('ComReg') set out its intention to release additional spectrum in the 10 GHz band. This band is used predominantly for the provision of high to very high speed broadband access for businesses.

The Fixed Wireless Access Local Area ('FWALA') scheme, which underpins the wireless provision of broadband access, was initiated in 2003 and to date accounts for 176 FWALA licences over the 3 available bands of 3.5, 10.5 and 26 GHz. The FWALA scheme services 118,497 broadband subscriptions², encompassing almost 10% of the total broadband market.

In Consultation Document 09/03 published on 29 January 2009, ComReg proposed to make available additional spectrum in the 10.5 GHz FWALA band for Wireless Broadband services under the FWALA scheme, thereby furthering consumer choice and service. Following the favourable response, ComReg is pleased to implement its proposal. The release of additional FWALA spectrum in the 10.5 GHz band will assist FWALA licensees in meeting the demand from consumers for access to broadband wireless services, particularly in highly populated areas where the demand for additional FWALA spectrum is at its greatest.

ComReg also proposed in the consultation to release 154 MHz of spectrum in the lower part of the 10 GHz band if there was sufficient market interest and if a viable application could be indentified. ComReg invited suggestions from interested parties as to possible uses for the spectrum. The consultation yielded very little interest and accordingly ComReg will not be releasing this spectrum.

Alex Chisholm
Commissioner

¹ ComReg document 08/50 – Spectrum Management Strategy Statement 2008 -2010 – published 1 July 2008.

² Figures retrieved from ComReg quarterly report Q4 2008, ComReg document 09/17 published 19 March 2009

2 List of Respondents

There were 4 respondents to Consultation document 09/03³. ComReg would like to thank those respondents for providing their opinions, and the time and work that went into doing so. All responses received by ComReg in relation to Consultation document 09/03 (except annexes or information deemed confidential, as per ComReg Document 05/24) will be made available at www.comreg.ie in document 09/36s.

Respondents (in alphabetical order):

- Digiweb
- Peter B Grant
- SR Telecom
- UPC

³ Release of Additional Spectrum in the 10 GHz Band: Including possible use of the band 10.0 GHz to 10.154 GHz for fixed, mobile or radiolocation services. ComReg Document 09/03 published 29 January 2009

3 Introduction

ComReg has a statutory function to ensure the efficient management of Ireland's radio frequency spectrum. In doing so, ComReg seeks to promote competition in the communications market.

The FWALA licensing scheme was initiated in 2003, and accounts for a significant portion (9.87%) of the total broadband market in Ireland⁴. Currently there are 16 licensees who between them hold 176 licences, which allows them to provide wireless broadband services to residential and business users.

Radio spectrum is a finite resource, and there is continuing demand from operators for FWALA licences, particularly in urban areas. Mindful of this demand, ComReg proposed the release of additional spectrum in the 10 GHz band in Consultation document 09/03. This Consultation consisted of two components. Firstly, ComReg stated its intent to release an additional channel at the higher end of the current 10.5 GHz FWALA band. This additional spectrum is proposed for release under the current FWALA scheme.

The second component was a proposal in relation to spectrum in the range 10.000 – 10.154 GHz. ComReg enquired as to what services, applications and technology may be deployed in this range of frequencies, and asked interested parties to inform ComReg of equipment availability in this band. ComReg also requested views on a potential licensing regime for this radio spectrum and the associated channel plan.

⁴ Figures retrieved from ComReg quarterly report Q4 2008, ComReg document 09/17 published 19 March 2009

4 Consultation Issues

4.1 Additional Spectrum in the 10.5 GHz FWALA band

In Consultation Document 09/03, ComReg set out its proposals to release additional spectrum in the 10.5 GHz FWALA band. The additional spectrum is located at the higher end of the FWALA band. As detailed in Consultation document 09/03, there is less spectrum available for licensing in Dublin and Cork compared with the rest of the country.

It was proposed that in Dublin and Cork, a paired 14 MHz Frequency Division Duplex ('FDD') channel would be released, and this is shown as Channel F (10.307 – 10.321 GHz and 10.657 – 10.671 GHz) in Figure 1.

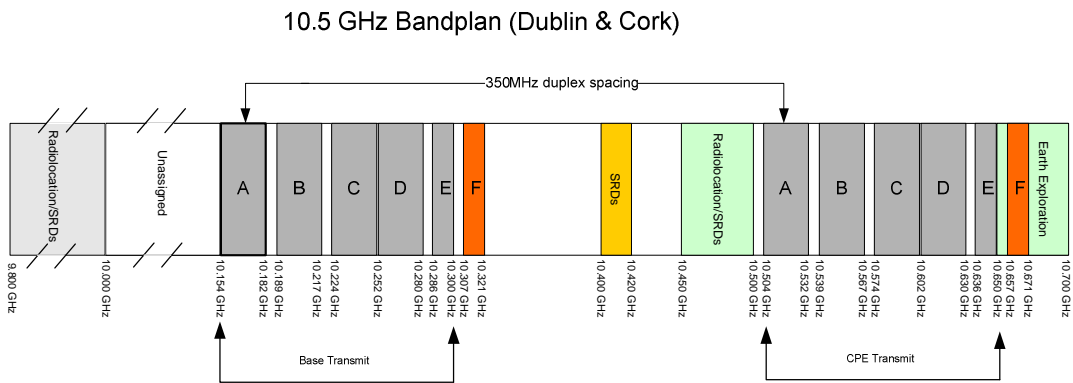


Figure 1: 10.5 GHz Bandplan in Dublin and Cork areas only.

For the rest of the country, that is everywhere except Dublin and Cork, the consultation proposed the release of a paired 2 x 28 MHz FDD channel, which is shown as Channel G (10.294 – 10.322 GHz paired with 10.644 – 10.672 GHz) in Figure 2.

Any potential licensees in Channels F and G must adhere to the mandatory sharing criteria, which is outlined in the FWALA guidelines document⁵.

⁵ Revised Guidelines to Applicants for Fixed Wireless Access Local Area (FWALA) Licences – ComReg document 06/17R4 published 2 April 2009

Provision of Additional Spectrum in the 10.5 GHz Band

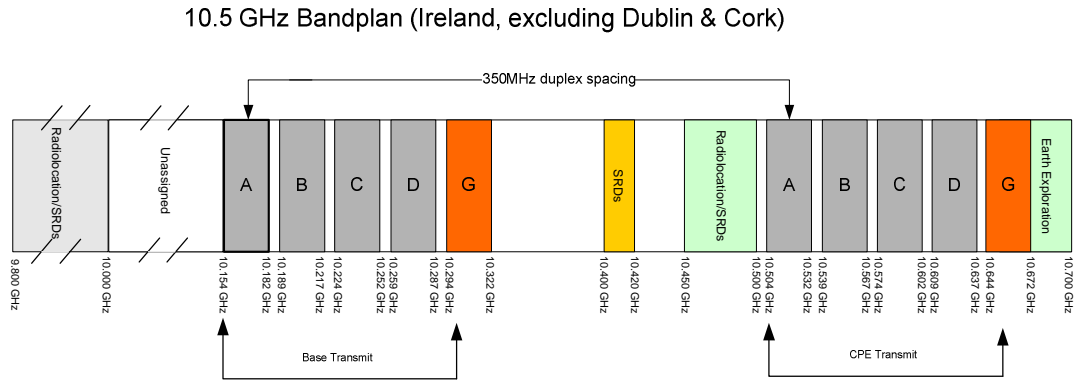


Figure 2: 10.5 GHz FWALA Bandplan throughout Ireland, excluding Dublin and Cork areas

ComReg intends to proceed with the release of additional spectrum in the 10.5 GHz FWALA band. Channel F will be made available in Dublin and Cork, and Channel G will be made available nationwide excluding Dublin and Cork. Any licensee who successfully acquires a licence for these newly released channels must adhere to the sharing criteria outlined in ComReg FWALA guidelines. However given the limited interest shown in this spectrum and ComReg’s recent commitment to releasing spectrum at 3.5 GHz⁶, ComReg does not expect to release this spectrum before Q4 2009.

4.2 Release of Additional Spectrum between 10.000 – 10.154 GHz

In Consultation document 09/03, ComReg proposed to release spectrum between 10.000 – 10.154 GHz.

In Europe and internationally, this sub band is allocated to the fixed, mobile and radiolocation services on a co-primary basis, and to the amateur service on a secondary basis. The International Radio Regulations⁷ also allocate, through footnote 5.479, the band 9975-10075 MHz to the meteorological-satellite service on a secondary basis for use by weather radars.

⁶ FWALA licensing in the 3400 – 3800 MHz band – Release of further spectrum, ComReg Document 09/21

⁷ ITU International radio regulations, regulations available from ITU

In Ireland, the spectrum 10.000 – 10.450 GHz is designated⁸ for use by FWALA, amateur services on a secondary basis, short range devices, and services ancillary to broadcasting.

ComReg posed a number of questions in this regard, detailed below.

4.2.1 Possible utilisation of 10.000 – 10.154 GHz and equipment availability

The sub-band 10.000 – 10.154 GHz is currently not used in Ireland by either the fixed, mobile or radiolocation service applications and ComReg believed that this 154 MHz of spectrum could be a valuable resource for the provision of fixed, mobile or radiolocation services. Due to the spectrum located between 10.000 – 10.154 GHz not forming part of a harmonised band throughout Europe, ComReg requested information from interested parties as to what services/technology/applications could be deployed within the sub-band 10.000-10.154 GHz. In addition ComReg expressed an interest in receiving details of available equipment and the views of suppliers.

ComReg asked the following question in the consultation:

Q. 1. What services/technology/applications could be deployed within the sub-band 10.000-10.154 GHz? In particular, ComReg is interested in receiving details of available equipment and the views of suppliers.

4.2.1.1 Views of Respondents

Three respondents expressed views on this question. One respondent believed that this spectrum could be used for enterprise applications to support Access, Private Network, Security and Backhaul. This respondent also referenced equipment which would operate in the sub band to provide Ethernet services for enterprise, arguing that it enables state-of-the-art networks to leverage cost-effective WiMAX technology in the widely-available 10.5 GHz band.

Another respondent believed that the spectrum could be used to offer high speed internet, VPN, voice and video services. This respondent employs Data Over Cable Service Interface Specifications (DOCSIS), and contended that it has been demonstrated that the most successful and cost-effective method for providing high-speed data services is via cable modems compliant with the DOCSIS specifications.

The final respondent was of the view that the spectrum 10.000 – 10.075 GHz should be left as is to satisfy the meteorological and weather radar. It also believed that Short Range Devices (SRD's) and radiolocation could occupy 10.075 – 10.157 GHz.

⁸ Radio Frequency Plan for Ireland, ComReg document 07/81, can be viewed at this address, http://www.comreg.ie/_fileupload/publications/ComReg0781.pdf

4.2.2 *Possible licensing options*

If ComReg decided to release spectrum in the range 10.000 – 10.154 GHz, it must decide how to assign the available spectrum. ComReg considered that making this spectrum available under the FWALA licensing regime could be the most efficient and appropriate method given that an appropriate licensing scheme is already in place.

Notwithstanding, ComReg was mindful that there may be services and applications other than FWALA that interested parties believe could operate in this spectrum.

With this in mind, ComReg sought the views of interested parties in spectrum 10.000 – 10.154 GHz with regard to what licensing regime could be used should this spectrum be released, and what method should be used to determine the successful applicant for the use of this band.

ComReg asked the following question in the consultation:

Q. 2. What licensing regimes and award processes would be most appropriate in facilitating the release of this spectrum? Please give reasons for your answer.

4.2.2.1 *Views of Respondents*

There were two responses to this question.

One respondent stated that the spectrum should be released under the current FWALA scheme. In doing so, this respondent believes that operators utilising 10.000 – 10.154 GHz could co-exist with operators utilising the downlink of the current 10.5 GHz FWALA band. Licensing 10.000 – 10.154 GHz under the FWALA regime would minimise the risk of interference between operators. This respondent held that a licence exempt regime would be unsuccessful, and suggested a minimum modulation efficiency of equipment of at least 3bits/Hz.

Another respondent held that this spectrum is only suitable for downlink operation, as duplex operation would require installation of filters which would make the product commercially ineffective. Therefore, this respondent believed that the additional spectrum should only be made available to existing licensed operators who currently have spectrum assigned in the 10.5 GHz band and who are therefore in a position to fully optimise the new non-paired allocations efficiently. This respondent also believed that the spectrum should be awarded on a first-come first-served basis rather than a beauty contest, and there should be no roll out conditions or minimum services requirement specified due to the possible complexities in pairing potential additional spectrum with existing assignments.

4.2.3 *Band Plan options*

If ComReg were to release additional spectrum 10.000 – 10.154 GHz, it would be necessary to decide upon the channel plan to be implemented. There is no harmonised European band plan for the 10 GHz band. With that in mind, ComReg proposed options in the Consultation document. The options presented were considered to be viable channel plans for the spectrum, and ComReg invited interested parties to comment on the feasibility of the options presented by ComReg, and welcomed alternative suggestions as to how the spectrum could be organised.

ComReg asked the following question in the consultation:

Q. 3. Do you favour the ComReg options? If so, which option do you deem to be the superior choice? Alternatively, please provide alternative proposals for preferred channel plan(s) for the sub-band 10.000 – 10.154 GHz? In outlining preferences please suggest appropriate guard bands, if any, and supporting arguments for your preferred channel plan.

4.2.3.1 Views of Respondents

There were three responses to this question. All three respondents provided alternative options than those proposed in the Consultation document.

One respondent preferred that the 154 MHz be divided up into a number of channels, with the minimum channel size being 3.5 MHz, on the basis that this would allow for a more flexible licensing scheme in areas of high demand. This respondent proposed options, dependent on whether the allocation was Frequency Division Duplexing ('FDD') or Time Division Duplexing ('TDD'). If the additional spectrum was defined for TDD usage, it stated that guard bands would be required to mitigate against interference, and that synchronization or an alternative mode of coordinated usage would also be required. The respondent also recommended an FDD arrangement within the additional spectrum. In addition, this respondent offered another option, which would allow for FDD and TDD to be located in the 10.000 – 10.154 GHz sub band.

Another respondent welcomed ComReg's Option 1, which offered one 154 MHz block. It believed that some of the 154 MHz should be paired with unused spectrum at 10.350 – 10.400 GHz and 10.420 – 10.450 GHz. The remaining spectrum in the range 10.000 – 10.154 GHz which would be left unpaired, could be paired with currently assigned spectrum in the 10.5 GHz FWALA band, using DOCSIS. The proposal as a whole is; pair 10.000 – 10.046 GHz with 10.350 – 10.396 GHz, pair 10.074 – 10.096 GHz with 10.424 – 10.446 GHz, downlink only between 10.046 – 10.072 GHz and 10.096 – 10.154 GHz with guard bands defined dependant on technology used. This respondent preferred the above option, but nonetheless provided alternatives should ComReg not be satisfied with the initial proposal. The additional options were to assign the 154 MHz of spectrum to a

single operator who has existing licensed bandwidth in the 10.5 GHz FWALA band, and other options were simply to split the 154 MHz of spectrum into smaller channels, specifically 24 MHz, 28 MHz, 56 MHz and 72 MHz channels.

The final respondent did not believe that the additional spectrum should be used for FWALA, and instead believed that spectrum from 10.000 – 10.075 GHz should be retained to satisfy meteorological and weather radar, and spectrum 10.075 – 10.157 GHz should be utilised by SRD's and radiolocation.

4.2.4 *Geographical Scaling*

Awards for the spectrum could be done on numerous scales; with the potential of making licences available locally (like current FWALA licences), regionally or nationally. ComReg requested that interested parties express their opinion on how any potential licences of this spectrum might be geographically scaled.

ComReg asked the following question in the consultation:

Q. 4. What is the optimum mix of geographical scaling which could apply to this block or these channels? How might this best meet consumers demand? Please give reasons for your answer.

4.2.4.1 Views of Respondents

There were two responses to this question.

One respondent suggested that there may be low demand for the additional spectrum because many operators will not have technology that can be used in this band, or will be unable to adapt their existing technology to pair it with current 10.5 GHz FWALA assignments. With this in mind, the respondent suggested that a low cost national licence be considered. Failing this, the respondent suggested that multiple urban areas, where current demand is high, be grouped together and put under a single licence. The respondent also suggested that the current local licence nature of the FWALA scheme could be used, though the cost of investing in essential technology should be set off by a low cost licence which would offer maximum opportunity for return to operators by capturing large urban areas with the licence.

Another respondent stated that the geographical scaling would be best proposed by any potential operators of the spectrum, and based on the amount of spectrum under consideration, believed that there is room for national, regional and local licences to be awarded.

4.2.5 *FDD or TDD usage*

Considering that the spectrum 10.000 – 10.154 GHz has no harmonised bandplan within Europe, ComReg requested interested parties views on whether the

spectrum should be released as paired or unpaired spectrum, or whether the proposed spectrum release should be flexible enough to allow both FDD and TDD.

ComReg asked the following question in the consultation:

Q. 5. Should the spectrum be released as paired or unpaired spectrum or by a licence scheme that allows licensees to choose? Please provide reasons for your answer.

4.2.5.1 Views of Respondents

There were three responses to this particular question.

Two of the respondents believed that the spectrum should be released as a combination of paired and unpaired spectrum. One of these respondents recommended that the majority of the spectrum should be released for FDD usage, with TDD usage to be allowed in the duplex gap between the FDD channels. The other respondent believed that two FDD channels could be created in the range 10.000 – 10.154 GHz, and the spectrum remaining which is unpaired spectrum in this range should be available for an operator to pair it with currently assigned spectrum in the current 10.5 GHz FWALA band. This may exclude new entrants and would imply that the spectrum is only suited to existing FWALA operators assigned 10.5 GHz licences.

Another respondent would favour spectrum to be released on a paired basis.

4.2.6 ComReg's position

Proposals were received from only one respondent with respect to the type of technology and services that could be deployed in the 10.000 – 10.154 GHz band. Having taken due consideration, ComReg believes there is little reason to release this at this time.

Accordingly, ComReg will not make any decisions in relation to the potential licensing regime and award process, channel plan and scaling of potential licences until a time when ComReg intends to release this spectrum. Communications technology is constantly evolving, and it would therefore be prudent of ComReg to reserve any such decisions until a time when it has a clear view of what technology could be deployed and any relevant technical restrictions.

5 Next Steps

ComReg will publish an Information Notice, inviting applications for Channel F and Channel G in the 10.5 GHz FWALA band later this year.

Radio Spectrum between 10.000 – 10.154 GHz will not be released at this time, but ComReg will keep the matter under review.