Commission for
Communications Regulation

Consultation Paper

FWALA licensing in the 3400 – 3800 MHz band

Release of further spectrum

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All responses to this consultation should be clearly marked:- "Reference: Submission re ComReg 08/99" as indicated above, and sent by post, e-mail or on-line at www.comreg.ie (current consultations), to arrive on or before 22 January 2009, to:

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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) has a statutory duty to ensure efficient management and use of the radio spectrum. With this duty in mind, ComReg is keen to promote competition in the provision of electronic communication services including cross platform competition. Promoting competition is a vital element of effective regulation as it is fundamental to encouraging innovative products and expanding choice for consumers.

In making spectrum available for electronic communication services ComReg is mindful of its duty to ensure that the use of radio frequency spectrum is efficient and that frequencies are made available through processes that are technology neutral, non-discriminatory, objective and proportionate. These obligations are not always complementary and ComReg must balance these against its policy objectives of promoting competition, extending consumer choice and encouraging innovation.

In this consultation, ComReg is proposing to make an additional 90 MHz of spectrum in the 3600 – 3800 MHz band available for licensing under the existing FWALA licensing regulations. This will enable existing licensees to obtain additional spectrum to meet expanding capacity requirements, in addition to allowing new operators to enter the market, thereby increasing competition and extending consumer choice.

In addition, ComReg is proposing to make Channel E available with restricted coverage in Dublin, Cork, Limerick, and Waterford.

ComReg encourages all interested parties to provide their views on the proposals contained in this consultation.

John Doherty,
Chairperson.

2 Introduction

In 2003, the Commission for Communications Regulation (ComReg) launched its Fixed Wireless Access Local Area ('FWALA') licensing scheme. These FWALA licences related to spectrum in the 3400 – 3600 MHz band (Channels A, B, C and D in Figure 1 below). To date ComReg has issued 207 FWALA licences to 15 different operators who are providing broadband services to over 121,000 customers.

The FWALA licensing scheme has been successful in driving the take-up of broadband services with a year on year increase in subscribers of 17.37% between quarter two 2007 and quarter two 2008[1]. To meet the growing demand of both consumers and operators ComReg is now proposing to make an additional 90MHz of spectrum available for FWALA licensing in the 3600 – 3800 MHz part of the band. ComReg is also proposing to make Channel E available in restricted areas of Dublin, Cork, Limerick, and Waterford.

ComReg will assign this additional spectrum via a comparative evaluation process in areas where demand exceeds supply. In all other areas licences will be offered on a first-come-first-served basis. ComReg will maintain the Speed to Market, and the "Temporary Licence" criteria that were introduced in ComReg documents 08/25 and 08/45[2]. In addition ComReg is proposing changes to the residential and business service offerings.

This consultation paper is not a legal document and does not constitute legal, commercial or technical advice. The Commission for Communications Regulation for is not bound by it. The consultation is without prejudice to the legal position of the Commission for Communications Regulation, or its functions and obligations under relevant legislation.

[1] ComReg Quarterly Review (08/75) September 2008.

[2] ComReg document 08/25 Information Notice – 3.5 GHz FWALA Channel A & C Spectrum – Comparative Evaluation Process and Form.

ComReg document 08/45 Information Notice – 3.5 GHz FWALA Channel C & 10.5 GHz FWALA Channels C & D Spectrum – Comparative Evaluation Process & Form

3 Spectrum in the 3600 – 3800 MHz band

ComReg has designated a total of 90 MHz of spectrum in the 3600 – 3800 MHz part of the spectrum, to be made available under the existing FWALA licensing scheme, under the Wireless Telegraphy (Fixed Wireless Access Local Area licences) Regulations S.I. 79 of 2003.

The spectrum is labelled Block 1 and Block 2 in Figure 1 below. Block 1 consists of 50 MHz of spectrum and Block 2 consists of 40 MHz of spectrum. However, to optimise the potential for inter-operator competition ComReg is minded to divide the two blocks into four or five separate blocks. In this section of the document ComReg sets out three possible options for issuing the additional spectrum. In deriving these options, ComReg has been mindful of its statutory functions and objectives.

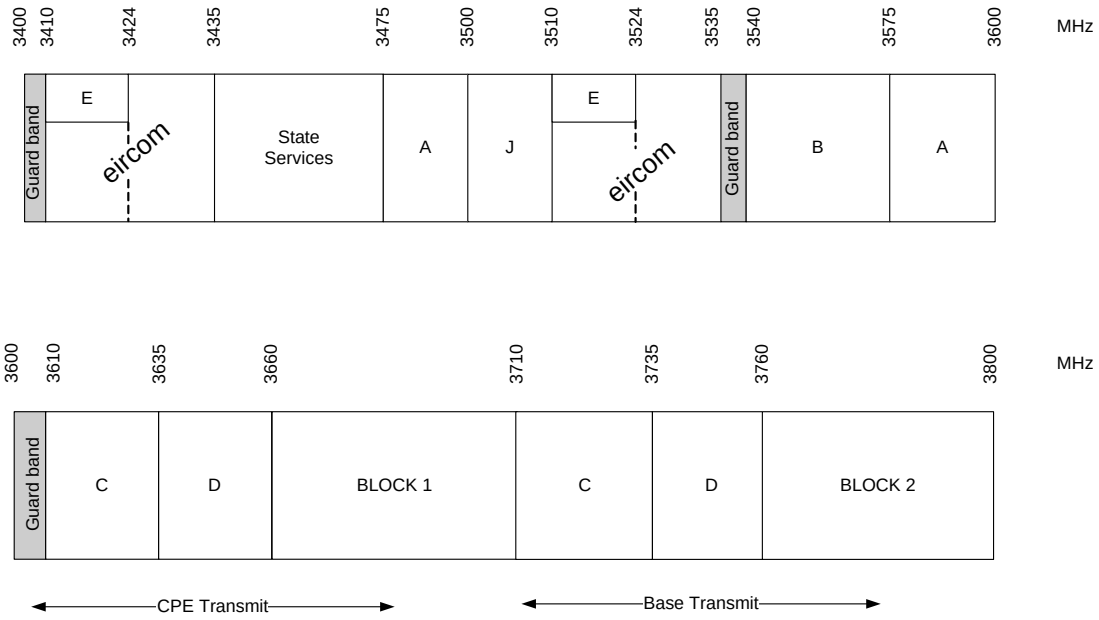

Figure 1: Overall channel plan for the 3.4 GHz – 3.8 GHz frequency band.

In areas where demand exceeds supply ComReg will conduct a comparative evaluation to determine the outcome of the award process. In all other areas applications will be treated on a first come first served basis.

3.1 Option 1: Two FDD/TDD Channels

Under the current FWALA licensing scheme operators are already permitted to deploy either FDD or TDD technologies in Channels A, C and D, which is in line with ComReg's commitment to make spectrum available on a technology neutral basis. Therefore a possible option would be to make two channels available, identified as Channels F/F' and G/G' in Figure 2 below, which would permit operators to deploy either FDD or TDD technology within the two blocks. There

would be a cap of 50 MHz on the amount of additional spectrum that any one operator can obtain in any one service area.

For FDD technology, an operator would require two frequency channels, an upper frequency channel for the base station transmit function and a lower frequency channel for the base station receiver function. TDD technology can be deployed in a single frequency channel as both the base station and CPE transmit and receive in the same frequency channel using time division to separate the transmissions. Therefore, under this option ComReg is proposing that operators indicate in their application whether or not they would be deploying FDD or TDD technology. If an operator intends to deploy FDD technology, and the operator is successful in its application, then the operator would be awarded the two frequency channels that make up that channel, i.e., F and F′.

An applicant intending to deploy TDD technology and requiring up to 50 MHz of spectrum could, for example, apply for frequency channels F or G. If, however, a TDD applicant only required 25 MHz of spectrum then, in the case of Channel F the applicant would be awarded either F or F′ but not both. This would enable ComReg to make the unassigned channel available to another TDD applicant.

Given that Channel G is not symmetric, in the event that an applicant wished to deploy FDD technology in that block the applicant would be awarded 2 x 15 MHz of spectrum, G and G′, with the remaining 10MHz in the lower sub-band of Channel G then made available as a TDD-only channel.

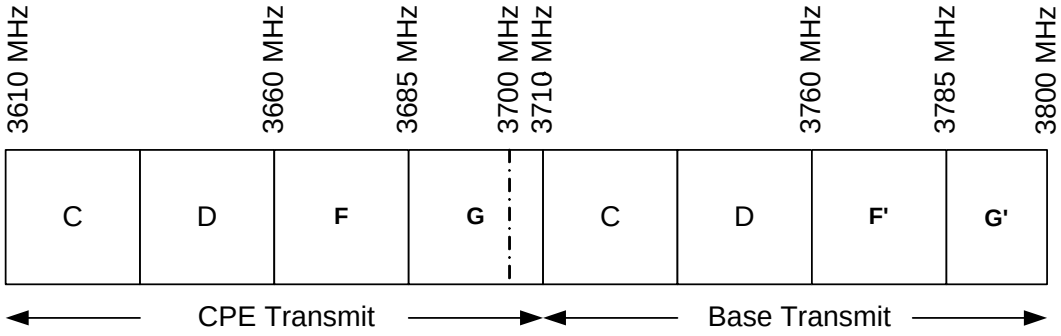

Figure 2: Option 1: Two FDD/TDD channels in the 3600 – 3800 MHz part of the band.

This option would ensure that the licences are awarded on a technology neutral and non-discriminatory basis. However, the fact that TDD operators would not be able to acquire contiguous blocks of spectrum could mean that they would have to deploy additional guard bands from within their spectrum assignment to mitigate against potential interference to or from FWALA networks in the adjacent band(s). The impact of this requirement for guard bands would be most pronounced in the 10 MHz TDD channel which would arise from the assignment of a symmetric pairing in Channel G/G′ to an FDD operator.

From the perspective of promoting competition and maximising benefits to the consumer, this option could enable up to four TDD operators to acquire licences in any one service area. An alternative outcome could be the licensing of two FDD operators in the one area and possibly also a TDD operator using the 10 MHz sub-band in frequency Channel G arising from the assignment of a symmetric FDD pairing in Channel G/G′.

3.2 Option 2: Five Generic Channels

In this option, ComReg is proposing to make the spectrum available as five separate generic channels (F, G, H, I and K) without specifying whether or not they are for FDD or TDD use. Operators would be able to apply for whatever combination of channels best suits their needs. As with Option 1, ComReg is proposing to cap the maximum amount of spectrum that an operator can acquire at 50 MHz in any one service area. Each channel would be licensed separately and as such would attract separate licence fees.

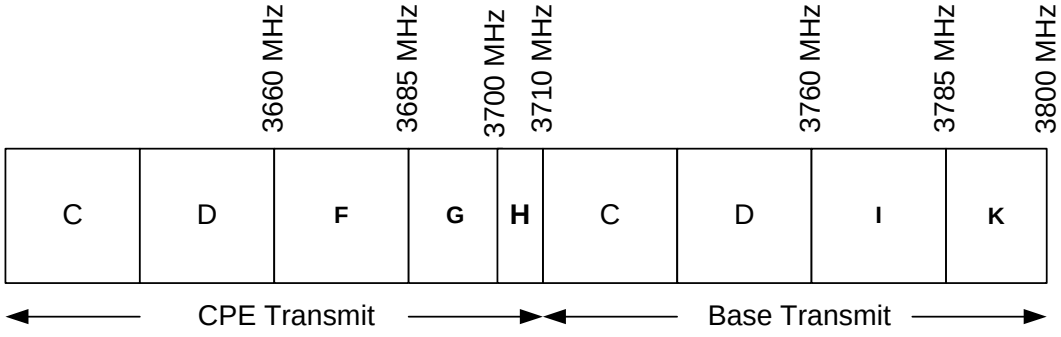

Figure 3: Option 2: Five generic blocks in the 3600 – 3800 MHz part of the band.

The advantage of this option is that it is neutral with respect to the technology to be deployed. For example, channels F and I or G and K respectively could be combined as FDD channels or alternatively deployed as separate TDD assignments. It therefore has the potential to meet the spectrum requirements of FDD operators and could also enable TDD operators to acquire contiguous blocks of spectrum, e.g. F, G, H or I and K. Furthermore, it has the potential to facilitate competition in that between four and five different operators could be accommodated in any one service area.

The risk with this option is that it may result in a less than efficient outcome in that all of the available spectrum may not be assigned in the event that operators wish to deploy different technologies. However, given that there has been a good level of competition for other FWALA licences and that ComReg is making the spectrum available to meet existing demand there is a reasonable prospect for a positive outcome in most areas of the country.

3.3 Option 3: Three Channels (one FDD/TDD and two TDD)

A third option would be to make three separate lots of spectrum available as shown in Figure 4 below. In this option ComReg is proposing to make one FDD/TDD channel available, i.e., Channel F/F', and make two TDD-only channels available, i.e., Channels G and I. Channel F consists of 2 x 25 MHz frequency channels, Channel G comprises one 25 MHz frequency channel and Channel I consists of a 15 MHz frequency channel. Channel F/F' would be made available on the same basis as the existing FWALA channels A, C and D in which operators are permitted to deploy either FDD or TDD technology. As Channels G and I are not symmetrical, ComReg is proposing to make them available on the same basis as the existing Channel B, i.e., for TDD use only. This would ensure that both channels are fully utilised, thereby increasing the spectrum efficiency of the award process. Again ComReg is proposing to impose a cap of 50 MHz on any one operator in any service area.

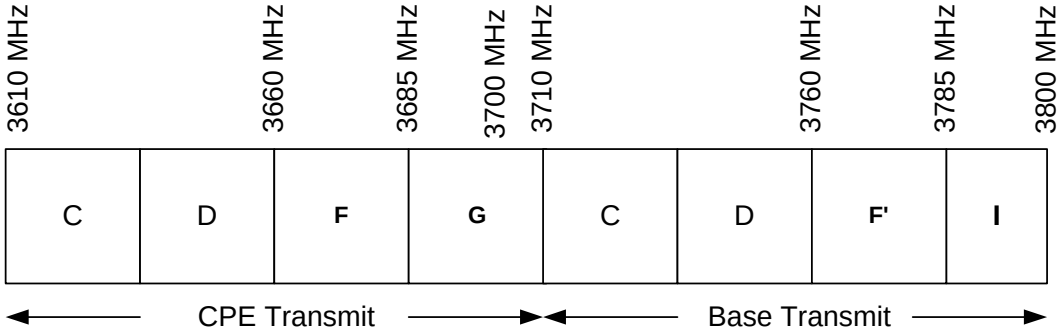

Figure 4: Option 3: One FDD/TDD block and two TDD-only blocks in the 3600 – 3800 MHz part of the band.

As with Option 1 above, TDD operators would not be able to acquire contiguous blocks of spectrum. On the other hand it maximises spectral efficiency in that there is no possibility of a 10 MHz tranche of spectrum being left unassigned. From the perspective of enhancing competition there is the potential for three different operators in any one service area, thereby maximising the benefits to consumers. It also meets ComReg's obligation to be technology neutral where possible.

Q. 1. Which of the three options outlined above would, in your view, be the optimum for the assignment of the additional FWALA spectrum, noting the requirement on ComReg to grant rights of use for spectrum in an open, transparent and non-discriminatory manner? Please give reasons for your answer.

Q. 2. Is there another option that in your view would provide a better outcome? If so please provide full details.

4 Revised Service Offerings

Under the current FWALA licensing scheme operators are obliged to make FWALA services available on request to all of its customers within coverage having the attributes as detailed in the FWALA Guidelines document 06/17R3.

It is ComReg's view that these data transmission rates need to be revised upwards to reflect the capabilities of current technologies and consumer demand for fast reliable broadband. ComReg is therefore proposing to amend the minimum data transmission rates that can be offered by a FWALA licensee to its business and residential customers as per Tables 1 and 2.

Nominal data transmission rate, network to subscriber	2 Mbit/s
Nominal date transmission rate, subscriber to network	256 kbit/s
Maximum contention ratio	24:1
Minimum Inclusive data allowance in monthly tariff	10 GByte/month

Table 1: Residential service offering

Nominal data transmission rate, network to subscriber	3 Mbit/s
Nominal date transmission rate, subscriber to network	2 Mbit/s
Maximum contention ratio	10:1
Inclusive data allowance in monthly tariff	Unlimited

Table 2: Business service offering

These revised data rates will only apply to new FWALA licences and not existing FWALA licences. These proposed data rates are the minimum that must be offered. Operators are free to exceed these limits if they so wish.

Q. 3. Do you agree with ComReg's proposal to increase the minimum data transmission rate that will apply to all new FWALA licences? Please give reasons for your answer.

5 Channel E

ComReg proposes to make a further channel, Channel E available on a restricted basis as set out in Table 3 below. Channel E, as shown in Figure 1 above, consists of 2 x 14 MHz of spectrum, 3410 – 3424 MHz paired with 3510 – 3524 MHz. The restrictions on Channel E are a result of the use of the frequencies by *eircom* under its current FWPMA licence in other areas of the country. Use of the areas in which ComReg is now proposing to licence Channel E was relinquished by eircom following a review of its FWPMA licence in 2003[3].

The radius of the service area is defined from the centre of the area (given by a national grid reference in the table below). In maximising the value of Channel E, ComReg proposes that operators using Channel E will be permitted to deploy services right up to the service area boundary, whilst respecting a proposed higher field strength limit at the boundary of the service area as set out in Table 3 below. **Please note that these field strengths will apply to Channel E only.** Also please note that an interference contour is not defined in this instance and licensees in Channel E would be duty bound to ensure that they do not cause harmful interference into eircom's FWPMA network

Area	Service Area Radius km	Field Strength Limit dBµV/m	Centre of Area (National Grid Reference)
Greater Dublin Area	7.5	48	E312686 N234396
Cork County Borough	2.8	60	E167580 N072176
Limerick County Borough	2.1	60	E157599 N157140
Waterford County Borough	1.9	60	E259480 N111561

Table 3: Service area and field strength limits applicable to Channel E.

[3] eircom's FWPMA licence is due to expire in June 2010.

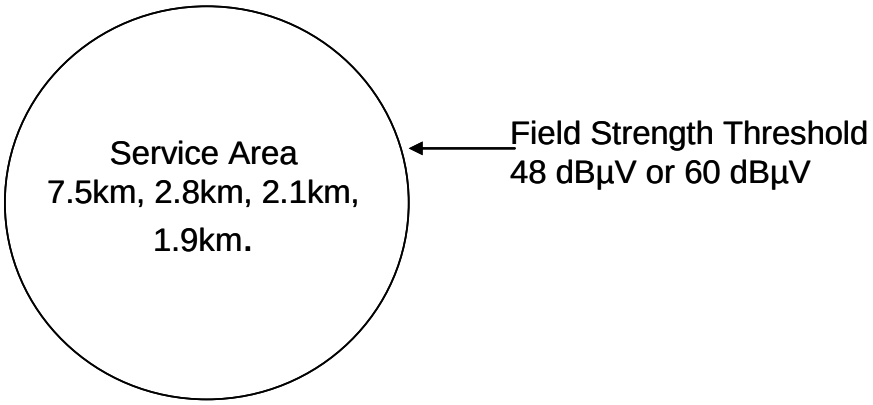

Figure 5: Channel E Service Area and Field Strength limits.

Q. 4. Do you agree with ComReg's proposals concerning the release of Channel E? Please set out your reasoning for your answer.

6 Licence Fee

In assessing the options detailed in Section 3 above respondents should consider the implications on the annual licence fee that would apply for each option. The range of licence fees applicable to FWALA licences are given in Table 4 below and are in accordance with the existing FWALA Guidelines 06/17R3.

Bandwidth (Paired Channel)	**Licence fee (€)**
Up to 7 MHz	1500
Over 7 MHz and up to 14 MHz	2000
Over 2 x 14 MHz and up to 2 x 28 MHz	2800

Table 4: Schedule of FWALA fees

The annual fee for a single channel (TDD) will be calculated by first determining the "equivalent" paired channel bandwidth and then using Table 4 to determine the fee.

Example:

A single 10 MHz channel equates to the "equivalent" paired channel bandwidth of 2 x 5 MHz. Using Table 4 above a single 10 MHz channel would attract a licence fee of €1500 per annum.

7 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 12 December 2008 to 22 January 2009 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 responses and publish a report in March 2009 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. We would request that electronic submissions be submitted in an-unprotected format so that they can be appended into the ComReg submissions document for publishing electronically.

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.

Annex A – Consultation Questions

Q. 1. Which of the three options outlined above would, in your view, be the optimum for the assignment of the additional FWALA spectrum, noting the requirement on ComReg to grant rights of use for spectrum in an open, transparent and non-discriminatory manner? Please give reasons for your answer. 7

Q. 2. Is there another option that in your view would provide a better outcome? If so please provide full details. 8

Q. 3. Do you agree with ComReg's proposal to increase the minimum data transmission rate that will apply to all new FWALA licences? Please give reasons for your answer. 9

Q. 4. Do you agree with ComReg's proposals concerning the release of Channel E? Please set out your reasoning for your answer. 11