



Commission for
Communications Regulation

Response to Consultation

FWALA licensing in the 3400 – 3800 MHz band

Release of further spectrum

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1 Foreword

The Commission for Communications Regulation (ComReg) has a statutory duty to ensure the efficient management and use of the radio frequency spectrum. With that 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 Consultation Document no 08/99, issued on 12 December 2008, ComReg proposed making an additional 90 MHz of spectrum in the 3600 – 3800 MHz band available for licensing under the existing FWALA licensing regulations. This would enable existing licensees to obtain additional spectrum to meet expanding capacity requirements, and allow new operators to enter the market, thereby increasing competition and extending consumer choice. ComReg also proposed making the Channel E spectrum available.

All interested parties were encouraged to provide their views on the proposals contained in that consultation paper.

On behalf of the Commission, I am pleased to present ComReg's response to that consultation. Summaries of the responses received are set out in this paper, together with ComReg's consideration of those responses and ComReg's decisions as to how it intends to proceed. ComReg has also set out its intentions with regard to Channel J.

The FWALA licensing scheme has, to date, issued over 200 licences to operators, who now provide wireless broadband services to more than 110,000 customers. The release of additional spectrum will enable existing licensed FWALA operators to obtain additional spectrum to meet expanding requirements, while also allowing new operators to enter the market, thereby increasing competition and extending consumer choice.

Alex Chisholm
Commissioner

2 List of Respondents

There were 11 responses to Consultation Document 08/99¹ and ComReg would like to thank all the respondents for their time and effort and for the valuable information provided. All responses received by ComReg (for annexes marked as confidential in accordance with ComReg Document 05/24) will be made available at www.comreg.ie.

Respondents:

- Access Partnership on behalf of SAP REG, ESOA and GVF.
- AirSpeed Telecom
- Digiweb
- eircom
- Imagine Communications
- Last Mile Wireless
- Nova Networks
- PermaNET
- Smart Telecom
- UPC
- WiMAX Forum

¹ FWALA Licensing in the 3400 – 3800 MHz band: Release of further spectrum. ComReg Document 08/99, 12 December 2008

3 Introduction

In 2003, ComReg launched its Fixed Wireless Access Local Area ('FWALA') licensing scheme. The FWALA licences granted under that scheme related to spectrum in the 3400 – 3600 MHz band (Channels A, B, C and D). To date ComReg has issued 207 FWALA licences to 15 different operators who together provide broadband services to over 110,000 customers.

The FWALA licensing scheme, since its launch in 2003, has been successful in driving the take-up of broadband services in Ireland. There are currently 118,497 FWALA subscribers, representing almost 10% of the total broadband subscriptions in Ireland². FWALA plays a pivotal role in the provision of broadband services nationwide and in increasing competition in the broadband market.

In order to meet growing demand for broadband services, ComReg proposed in its Consultation Document 08/99 to make an additional 90 MHz of spectrum in the 3600 – 3800 MHz part of the band available for the provision of FWALA services. This additional spectrum will enable both new and existing FWALA operators to meet the needs of both existing and prospective users of broadband services. ComReg also proposed making Channel E spectrum available in restricted areas of Dublin, Cork, Limerick, and Waterford.

ComReg stated in Consultation Document 08/99 that it will assign the additional spectrum via a comparative evaluation process, in areas where demand exceeds supply. In all other areas, licences will be granted on a "first-come first-served" basis. ComReg will also maintain the "Speed to Market" and the "Temporary Licence" criteria that were introduced in ComReg documents 08/25³ and 08/45⁴, though ComReg will amend the required data transmission rates for residential and business broadband offerings.

In addition ComReg now intends to make Channel J available for FWALA licensing at the same time as the additional spectrum as identified in Consultation Document 08/99.

All ComReg documents referred to herein are available at www.comreg.ie.

² ComReg Quarterly Review Q4 2008, ComReg Document 09/17

³ ComReg Document 08/25 Information Notice – 3.5 GHz FWALA Channel A&C Spectrum – Comparative Evaluation Process and Form.

⁴ ComReg document 08/45 Information Notice – 3.5 GHz FWALA Channel C and 10.5 GHz FWALA Channels C & D Spectrum – Comparative Evaluation Process and Form

4 Consultation issues

4.1 Options

In Consultation Document 08/99, ComReg designated 90 MHz of spectrum in the 3600 – 3800 MHz part of the spectrum band, to be made available under the existing FWALA licensing scheme,

The 90MHz of spectrum consisted of two blocks, of 50 MHz and 40 MHz. To optimise the potential for inter-operator competition, ComReg stated that it was minded to divide those two blocks into four or five separate blocks. ComReg set out three possible options for issuing the additional spectrum. All three options were evaluated according to the responses received, and how best they would accord with ComReg's statutory functions and objectives.

The three options were:

- Option 1 - make two channels available, identified as Channels F/F' and G/G', which would permit operators to deploy either Frequency Division Duplex ('FDD') or Time Division Duplex ('TDD') technology within the two blocks. There would be a cap of 50 MHz on the amount of additional spectrum that any one operator could obtain in any one service area;
- Option 2 - 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 proposed capping the maximum amount of spectrum that an operator could acquire at 50 MHz in any one service area;
- Options 3 - make three channels available, one for FDD/TDD technology and two channels for TDD technology only. A spectrum cap of 50 MHz was proposed for this option.

Views on the three options were then requested as follows:

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.

4.1.1 Views of Respondents

Seven respondents expressed views on the three options. One respondent was of the view that any of the options would result in less than optimum use of the spectrum depending on the specific demand. It considered that Option 1 provided a suitable basis for the award process and that Options 2 and 3 provided no material advantage. It also proposed that in the event that all the licensees in a particular FWALA service area opted for TDD equipment that they should be permitted to swap blocks to create contiguous assignments.

Three respondents considered that Option 1 provided the best opportunities for both FDD and TDD operators to acquire spectrum. Two of these three respondents were of the view that the concerns raised by ComReg with regard to the need to deploy guard bands between FDD and TDD operators could be overcome by inter-operator coordination. Both respondents were of the view that Option 2 would be likely to result in inefficient use of spectrum, with one respondent stating that Option 2 would also introduce an unnecessary additional licence fee that would possibly have a significant impact on price competitiveness.

Two respondents expressed a preference for Option 2. One respondent was of the view that the allocation of spectrum should be on the basis of the availability of technology and it would be prudent of ComReg to take into consideration the fact that most vendors focus on TDD mode of IEEE standard 802.16e. It considered Option 2 to be the best solution because it would enable operators to acquire contiguous channels. The second respondent saw Option 2 as the least discriminatory method of offering the spectrum and was of the view that it would allow more operators to offer services. It also considered that TDD mode will allow for greater utilisation of spectrum as it becomes scarcer, thereby maximising spectrum efficiency.

One respondent expressed a preference for Option 3 on the grounds that the channel allocation is clear. It further stated that there is no ambiguity between channels that can be used for TDD or TDD/FDD modes, and that there is no spectrum inefficiency in that the entire spectrum can be used for FDD or TDD mode services. With regard to Option 1, it stated that it was not clear that operators would be able to switch from FDD to TDD following the licence awards, and an operator that could not switch would be limited in its ability to configure its network in an optimal manner. An operator may wish to swap between FDD and TDD as technology evolves. In addition, if licensed operators were allowed to switch from FDD to TDD then there would be clear advantages to applying for FDD licences as this would maximise available spectrum. It went on to say that the award of two FDD licences in any one service area would result in an inefficiency as it would isolate a 10 MHz TDD block which, in their view, would be too small and isolated and so would be rendered useless.

Two respondents put forward another possible option, in response to Question 2. Both respondents proposed that priority be given to applications for licences to cover geographical areas outside the current FWALA service areas adjoining major urban areas. They submitted that the initial phase of the FWALA licensing scheme

awarded licences for the main urban areas, and that the local area nature of the scheme, coupled with the requirement for an exclusion zone, means that some rural areas of the country are not covered by wireless broadband services of any kind. They contended that the main urban areas already have access to a wide range of broadband technologies and there is sufficient competition to ensure prices are kept low and consumers have choice. They suggest that a weighting system should apply to applications for new spectrum in rural areas to ensure the efficient use of spectrum where it is most needed.

4.1.2 ComReg's Position

Having considered all of the responses received, ComReg intends to proceed with Option 1, and release additional 90 MHz of spectrum in the 3600 – 3800 MHz part of the band, as shown in Figure 1 below.

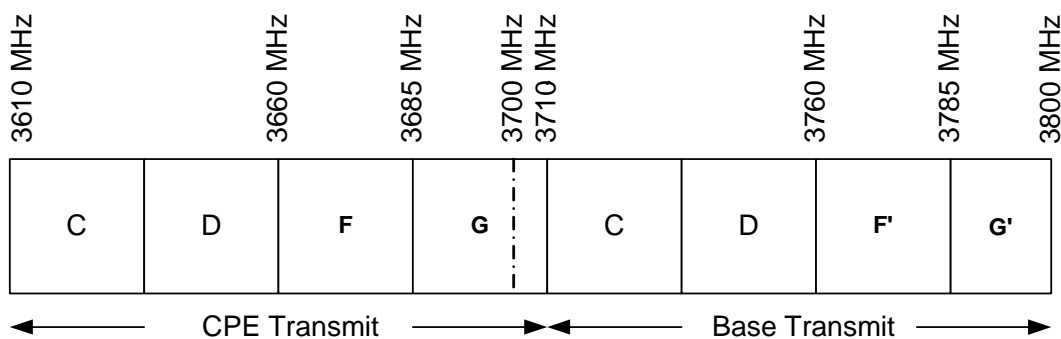


Figure 1: Option 1: Two FDD/TDD channels in the 3600 – 3800 MHz part of the band.

ComReg considers that there is no advantage to be gained from applying for FDD licences rather than TDD licences, as both technologies are subject to the same spectrum cap of 50 MHz. Should an operator acquire a licence with two 25 MHz channels, for example F and F', and if that operator wishes to deploy TDD technology, then the operator must utilize the available spectrum. That is to say, ComReg does not favour a spectrum configuration which would leave one 10 MHz carrier centred in each spectrum block, as this could be incorporated in a single 25 MHz channel. If, at the date of licence renewal or following a licence compliance audit, a TDD operator was found to be only utilising one of two spectrum blocks licensed to that operator, then ComReg would, in line with its mandate to optimise spectrum efficiency, take appropriate action.

Operators will be permitted to change from FDD to TDD technology and from TDD to FDD technology after licence issue. However, licensees must receive advance permission from ComReg before making any such changes, which would constitute an amendment to the conditions of their licence. This is why an operator is strictly required to inform ComReg, as part of the licence application process, whether both blocks of spectrum are required.

The spectrum will be made available in all areas of the country. This will give operators the opportunity to apply for licences in rural areas where they cannot currently obtain FWALA licences due to overlapping service area constraints. While ComReg is cognisant of the need to ensure that end-users throughout the State have access to broadband services (and where possible a range of such services) ComReg does not see any advantage in prioritising rural licence applications over urban ones. Doing this would be discriminatory, and could not be justified on objective grounds as there would be no guarantee that a greater number of end users would ultimately benefit.

The 90MHz of spectrum which will be released is adjacent to FWALA Channels C and D which are licensed throughout the country. Channels C and D can operate in FDD or TDD modes. The 90MHz of additional spectrum that will be released, (Channels F, F', G and G') can also operate in FDD or TDD modes.

A situation could occur where a FWALA licensee operating in a particular geographical area, using FDD technology and a new licensee acquires spectrum in an adjacent channel for the same geographical area but chooses to use TDD technology. Such a situation, where different technologies are being deployed in the same region, could give rise to potential harmful interference. Therefore, ComReg considers that responsibility lies with new FWALA licensees to ensure that no interference is caused to existing FWALA licensees. This may involve implementing internal guard bands and filtering equipment.

4.2 Revised Service Offerings

In Consultation Document 08/99, ComReg stated its view that data transmission rates for residential and business broadband offerings needed to be revised upwards, to reflect the capabilities of current technologies and consumer demand for fast reliable broadband. ComReg put forward proposals to revise data transmission rates, as per Tables 1 and 2 below.

Nominal data transmission rate, network to subscriber	2 Mbit/s
Nominal data 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 data 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

ComReg asked the following question in the consultation:

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.

4.2.1 Views of Respondents

Seven responses were received to Question 3. One respondent considered, for reasons unstated, that the issue was a difficult one for regulation but had no specific objection to the proposal. A second respondent supported ComReg’s revised service offerings but stated that it would aim to deliver an even higher grade of service.

Four of the respondents did not agree with ComReg’s proposal to revise upwards the residential service offering. Three of these respondents were of the view that a 2 Mbps offering was not representative of the market and that a 1 Mbps product should be the required service offering. One respondent stated that eircom’s 1 Mbps DSL product was the benchmark service for broadband in Ireland today and that this was used by 80% of all DSL subscribers. It proposed that ComReg should set a minimum residential service offering of 1 Mbps downstream, 128 kbps upstream, 24:1 contention ratio and 10 GB/Month data allowance. Another respondent was of the view that in the case of rural residential deployments ComReg’s proposals would further restrict the ability of FWALA operators to compete commercially with non-FWALA operators.

A further respondent agreed with the proposed residential service offering but suggested that the business offering should be a minimum data rate from subscriber to network of 1 Mbps with a data transfer limit of 131 GB/month. It was of the view that with a TDD system a 3:2 download/upload ratio would seriously impact on the number of Customer Premises Equipment (CPEs) allowed in a sector, thereby reducing the number of subscribers enabled within the assigned channels. It believed that a minimum subscriber to network data rate of 1 Mbps would be sufficient. With regard to the proposed unlimited data transfer allowance, under a monthly tariff for business users, it stated that wireless broadband products with DSL like price points are not suited to unlimited data transfer. If there is a contention ratio of 10:1 for business users, then it is imperative that this contention ratio is applied to data transfer as otherwise it will not technically apply at all, and other users will be denied use if just one or two users are running their connections at full speed all of the time. It was of the view that failure to implement its proposal of a 131 GB/month data allowance would result in operators introducing “Fair Usage Policies” in order to meet the basic technical fairness requirement which would not be in the best interest of the consumer.

One respondent agreed with ComReg's proposal to increase the minimum data transfer rate for business service offerings on the downlink but stated that in their experience the uplink demand is typically one third of the downlink demand and as such recommended a 1 Mbps subscriber to network data rate. A second respondent was of the view that business offerings should remain symmetrical at 2 Mbps as this was the benchmark for business customers. It stated that it was unclear as to why a 3 Mbps downstream/2Mbps upstream product was suggested, as this would appear to be an irregular product offering. It went on to say that an asymmetrical service offering should not be used as the benchmark for business services.

Two respondents were of the view that ComReg's proposals for business service offering were not representative of what was generally supplied by operators or required in general by the business market and as such a 2 Mbps/1Mbps package should be used for comparative evaluation purposes.

4.2.2 ComReg's Position

ComReg's latest Quarterly Report (Doc. 09/17⁵) shows that the majority of residential and business customers in the State subscribe to packages in the 2Mbps – 9.99Mbps range. In addition, there has been a decline in the number of residential customers subscribing to 144kbps – 1.99 Mbps packages. The number of residential customers subscribing to a 2 Mbps – 9.99Mbps package now stands at 60% while the number of business customers subscribing to a 2Mbps – 9.99 Mbps is 68%. Overall, the data shows a clear preference, amongst residential and business subscribers, for higher data transfer rates.

Under the existing FWALA licences ComReg sets the service standards for business and residential customers. ComReg is of the view that consumers should have access to the highest level of products and services from operators across all platforms. As such, it is important that operators continue to upgrade their networks and service offerings, to ensure that Irish consumers benefit from technology evolutions which allow for faster broadband speeds. ComReg therefore intends to implement the revised residential service offering proposed in Consultation Document 08/99 to all new FWALA licences, i.e., a minimum download speed of 2 Mbps, a minimum upload speed of 256 kbps with a 24:1 contention ratio and a monthly data allowance of 10 Gbytes.

With regard to business service offerings, there is a wide variation in the market as to what is available to businesses with some service providers offering symmetric packages while others do not. This is reflected in the differing views expressed by respondents on this issue. Accordingly, and having taken into account these views ComReg intends to proceed with the symmetric business offering originally put forward in ComReg Document 08/25 ('3.5 GHz FWALA Channels A and C spectrum – Comparative Evaluation Process and Form') i.e. a 2Mbps symmetric product with a 10:1 contention ratio and unlimited monthly data allowance.

⁵ ComReg Quarterly Report Q4 2009 09/17.

<http://www.comreg.ie/fileupload/publications/ComReg0917.pdf>

4.3 Channel E

The Consultation Document 08/99 proposed making a further spectrum channel, Channel E, available on a restricted basis as set out in Table 3 below. Channel E 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 spectrum in areas in which ComReg proposed to licence Channel E arises from eircom’s relinquishing of the spectrum in 2003.

In order to maximise the value of Channel E, ComReg proposed that operators using Channel E would 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. ComReg further pointed out that an interference contour was not defined in this instance and that licensees in Channel E would be duty bound to ensure that they do not cause harmful interference to eircom’s FWPMA network.

Area	Service Area Radius km	Field Strength Limit dB μ V/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.

ComReg asked the following question in the consultation:

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

4.3.1 Views of Respondents

Five of the six respondents to Question 4 supported ComReg’s proposals concerning the release of Channel E. One of the five suggested that ComReg put in place a mechanism whereby the Channel E licensees could be facilitated in dealing with any

interference issues which may be caused by eircom's FWPMA network. Another respondent was of the view that the restricted coverage areas impact on the value of Channel E in several geographical areas. A further respondent was of the view that the service area available in Cork City was inadequate and should be revised upwards to a radius of 5.5 km. The fifth respondent who supported the release of Channel E stated that practical deployment measures could be used to effectively mitigate interference between adjacent operators.

One respondent did not support ComReg's proposal to release Channel E. It was of the view that, given the very small service areas involved and the absence of interference boundaries, the release of Channel E would have a negative impact upon customers in terms of quality of service, and would be onerous for both operators and ComReg to ensure that the Channel E boundaries were correctly operated and policed.

This respondent referred to ComReg's Response to Consultation on FWALA flexibility, (Document 07/29) in which ComReg rejected certain proposals on the basis that they would likely increase the risk of interference and would result in difficulties in ensuring compliance. It contended that to increase the field strength limits for smaller service areas was counterintuitive. It further contended that when it previously handed back Channel E spectrum (in respect of the four urban areas listed in Table 3 above) it was agreed that in order to optimise spectrum reuse and avoid compatibility issues, other licensed operators (OLOs) should meet the spectrum mask of ETSI EN 301 055⁶ or EN 301 124⁷⁸ and take all necessary steps to prevent interference (including the use of guard bands).

4.3.2 ComReg's Position

At present, Channel E is only available in the geographical areas, and within the radii, as detailed in Consultation Document 08/99. Were ComReg to implement interference contours in Channel E it would at best substantially reduce the service area and at worst completely obscure the available service areas. ComReg recognises that the limitations of Channel E are such that operator interest in acquiring Channel E spectrum may also be limited. However, given the scarcity of spectrum in the Dublin area, in particular, ComReg is minded to proceed with the release of Channel E as detailed in the Consultation Document 08/99.

The agreement between ComReg and eircom in relation to the release of channel E included the following conditions:

⁶ ETSI EN 301 055 Fixed Radio Systems: Point-to-multipoint equipment: Direct sequence Code Division Multiple Access (DS-CDMA) point-to-multipoint digital radio systems in frequency bands in the range 1 GHz to 3GHz.

⁷ ETSI EN 301 124 Fixed Radio Systems: Point-to-multipoint equipment: Direct sequence Code Division Multiple Access (DS-CDMA) point-to-multipoint digital radio systems in frequency bands in the range 3 GHz to 10 GHz.

⁸ Note: The above standards have been superseded and replaced by ETSI EN 302 325: Fixed Radio Systems: Multipoint Equipment and Antennas: Part 1: overview and Requirements for Digital Multipoint Radio Systems: Fixed Radio Systems: Multipoint Equipment and Antennas: Part 2: Harmonized EN covering the essential requirement of article 3.2 of the R&TTE Directive for Digital Multipoint Radio Equipment: Fixed Radio Systems: Multipoint Equipment and Antennas; Part 3: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Multipoint Radio Antennas.

- eircom is not permitted to transmit channels 1 – 4 [being the 2 x 14 MHz of spectrum that makes up Channel E] into the four urban areas listed in Table 3 above. If eircom transmissions on channels 1 – 4 outside of the urban areas do cause interference to OLO equipment operating within the boundaries in Table 3, then eircom will be required to take all necessary steps to remove the source of that interference.
- To optimise spectrum re-use and avoid compatibility issues, the affected OLO should ideally meet the same spectrum mask as that of eircom, i.e. ETSI EN 301 055 or ETSI EN 301 124. If not, the OLO must take all necessary steps including, for example, establishing guard bands to prevent interference into channels 5 – 7⁹ [being the 2 x 11 MHz of spectrum licensed to eircom nationally].

Existing FWALA operators currently engage in inter-operator co-ordination to minimise interference to their respective networks, and ComReg considers this to be the most suitable approach to take in relation to the future use of Channel E. As ever, ComReg will continue to act on complaints of interference received from licensed operators.

4.4 Other matters arising from Consultation 08/99

One respondent raised concerns regarding the importance of ensuring that both existing and future Fixed Satellite Service (FSS) use in the 3400 – 3800 MHz band is protected. The respondent highlighted the fact that about 160 satellites operate in this band, providing services to a wide range of consumers. The respondent further referred to studies carried out prior to the ITU World Radiocommunication Conference 2007, which pointed to the difficulties that would be caused if FSS and Broadband Wireless Access (BWA) services shared the same band. This resulted in a rejection of the proposal for a global allocation facilitating deployment of IMT in this band.

The respondent further stated that interference caused to FSS by WiMAX deployments in the 3400 – 3800 MHz band, in various countries, was an increasing concern to both FSS operators and end users. The respondent further stated, anecdotally, that there is a threat to the quality of services provide by FSS operators, and that new BWA entrants in the 3400 – 3800 MHz band should be required to mitigate any harmful interference they cause to existing services such as FSS.

“Out of band” interference was also raised by this respondent, who referred to a study of the impact of such interference into a receiving FSS earth station, conducted by the ITU. That study found that the minimum separation distances required to protect the FSS were up to tens of kilometres with no guard band, but that the required distance decreased as the size of the guard band increased.

⁹ For the avoidance of doubt this refers all OLOs who take up a licence in Channel E.

4.4.1 *ComReg's Position*

ComReg recognises that while the development of FWALA (a Fixed Service) is a national priority, there is a co-primary allocation in this band with the FSS at both an ITU and European level. As such, most satellite usage in Ireland (and in the rest of the EU) is in the Ku band (10-15GHz) which currently has forty licences compared to four licences in the C band (3-6GHz). FSS in the C Band is typically used by national embassies, on a licensed but fee exempt basis and these services are co-ordinated in the normal manner.

ComReg sees no issue in maintaining the co-primary status of the 3400 – 3800 MHz band and will co-ordinate FSS earth stations as per the articles¹⁰ of the ITU Radio Regulations if and when the need arises. However, ComReg understands that in Ireland, to date, no interference complaints have been received in relation to FWALA base stations or user equipment interfering with C Band satellite services.

¹⁰ Article 9; 'Procedure for effecting coordination with or obtaining agreement of other administrations'

5 Channel J

In 2007 ComReg published its Response to Notice of Intention 07/42 “Reservation of Spectrum for the NBS” in which it detailed its intention to reserve 10 MHz of TDD spectrum, Channel J of Figure 2 below, for the successful bidder of the NBS scheme should they require it. However this spectrum is not required by the winning bidders of the NBS so ComReg intends to make Channel J available for FWALA licensing at the same time as the additional spectrum identified above. ComReg intends to publish its revised FWALA Guidelines in mid April 2009 and so any comments or observations in the interregnum are welcome.

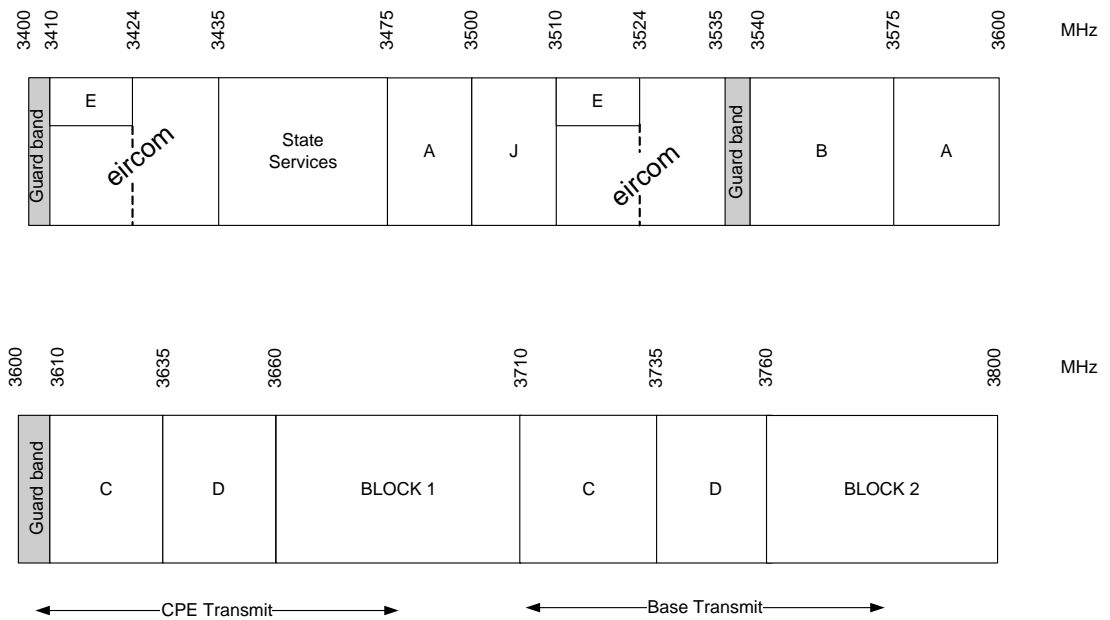


Figure 2: 3.4 – 3.8 GHz bandplan showing the location of Channel J.

6 Next Steps

ComReg will proceed with the publication of an Information Notice detailing the application process for the 90 MHz of spectrum in the 3600 – 3800 MHz part of the band as well as the spectrum identified as Channels E and J in the 3400 – 3600 MHz part of the band. The FWALA Guidelines document 06/17R3 will be updated to take account of the outcomes of this consultation process. The licences will be awarded via a comparative evaluation process.