



Commission for
Communications Regulation

Response to Consultation

The Implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 – 3800 MHz Band

Response to Consultation 10/55

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An Coimisiún um Rialáil Cumarsáide

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1 Foreword

The radio spectrum is fundamental to meeting business and consumer demand for broadband services. By mid-2010, close to 40% of Ireland's 1.6 million Internet subscriptions were through wireless and timely access to radio spectrum will be an essential component in Ireland's communications market.

A number of spectrum bands are used to bring wireless broadband services to consumers. The Commission for Communications Regulation (ComReg) is developing plans to make more spectrum available for this purpose and is reviewing the use of many of the bands in current use in order to meet the growing demand for innovative high speed services.

As of Q3 2010, a total of 78,835 fixed and nomadic wireless broadband connections operated through ComReg's Fixed Wireless Access Local Area (FWALA) scheme, the bulk of which operate in the 3400 – 3800 MHz band (the 3.6 GHz band).

In July 2010, ComReg published a consultation¹ on the introduction of mobility to that band and the implementation of EC Harmonisation Decision 2008/411/EC² ("the EC Decision"). Five organisations responded to the Consultation and the comments received have aided ComReg's deliberations on the introduction of mobility in this band.

This document represents ComReg's response to the Consultation and sets out the decisions that will be the foundation for fixed, nomadic and mobile use of this band. This document provides interested parties with certainty on the new BWALA³ licensing scheme, which, in parallel with FWALA, will form the framework for 3.6 GHz licences until the current local area use of the band comes to an end in July 2017.

Concurrently, ComReg is developing a framework that will replace the 3.6 GHz FWALA and BWALA schemes in order to better suit developments in the wireless communications market, from July 2017 onwards. This revised framework will be the subject of further ComReg consultation, addressing issues such as national or regional licensing and appropriate channelling arrangements that will apply to future use of the 3.6 GHz band.

**Alex Chisholm,
Chairperson**

¹ ComReg [Document 10/55](#): The Implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 – 3800 MHz Band – Regulatory and Technical Considerations.

² EC Harmonisation [Decision 2008/411/EC](#).

³ Broadband Wireless Access Local Area.

2 Executive Summary

This document sets out ComReg's response to Consultation 10/55 on "*The Implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 – 3800 MHz Band*" ("the Consultation").

The Consultation sought views from interested parties on a range of proposals including the introduction of a new Broadband Wireless Access Local Area (BWALA) licensing scheme, the implementation of the European Commission (EC) Decision and measures to ensure successful co-existence of future fixed, nomadic and mobile wireless services in the band with existing spectrum users.

The five responses⁴ to the Consultation were published on the ComReg website on 15 October 2010.

ComReg's proposals were broadly welcomed by respondents and their comments and the comments they submitted are discussed in detail as follows:

The regulatory policy issues concerning the implementation of the EC Decision and the introduction of mobility to the band are dealt with in **Section 3**:

- The timeframe for implementing the EC Decision.
- Introduction of the BWALA licensing scheme.
- Upgrade mechanism for FWALA licensees.
- Setting BWALA licence fees.

The implementation of the technical requirements of the EC Decision and consideration of co-existence issues related to the introduction of mobility are discussed in **Section 4**:

- Protection of 3.6 GHz FWALA and future BWALA services.
- Protection of non-FWALA/BWALA services in the 3.6 GHz band and users in adjacent bands.

Several respondents also commented on matters additional to those formally set out in the Consultation. These comments are discussed in **Section 5**:

- The end date for 3.6 GHz local area licensing.
- The principal of introducing BWA into the 3.6 GHz band at an international level.
- The implementation of other EC Decisions.
- Comments on ComReg's approach to FWPMA expiry.
- Future channel arrangements in the band.

⁴ ComReg [Document 10/85](#): The Implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 - 3800 MHz Band - Publication of Responses to Consultation Document 10/55.

Section 6 discusses further administrative measures that are required to introduce mobility into the band and the next steps in the process:

- Drafting an exemption order for mobile terminals.
- Revising the code of practice on domestic frequency coordination.
- Next steps

3 Regulatory Policy Issues

This section addresses the regulatory policy issues discussed in the Consultation:

- the timeframe of implementing the EC Decision;
- the principle of introducing the BWALA licensing scheme to facilitate mobility;
- the inclusion of a mechanism whereby existing 3.6 GHz FWALA licensees may convert FWALA licences to BWALA licences; and
- Setting of fees for future BWALA licences.

3.1 Timeframe for implementing the EC Decision

European Commission Decision 2008/411/EC sets out a phased approach for the 3.6 GHz band to be designated and made available as follows;

- the 3400 - 3600 MHz sub-band is to be designated and made available for terrestrial ECS by 21 November 2008; and
- the 3600 - 3800 MHz sub-band is to be designated and made available for terrestrial ECS by 1 January 2012.

In Ireland, most of the 3.6 GHz band is assigned to the same application (FWALA services) and currently there are no satellite earth stations licensed in the 3.6 GHz band. With regard to these factors, the consultation set out ComReg's view that there is no requirement to split the timing of the implementation of the EC Decision over two phases and to implement the EC Decision for both the 3400 – 3600 MHz sub-band and the 3600 – 3800 MHz sub-band at the same time. Interested parties were asked to comment on this proposal as follows:

Question 1: Are there any reasons why ComReg should not implement the EC Decision for the 3400 – 3600 MHz and 3600 – 3800 MHz sub-bands at the same time? Please provide supporting arguments with your response.

3.1.1 Views of Respondents

Respondents supported ComReg's proposal to apply the Decision to the entire 3.6 GHz band contemporaneously and no alternative views were offered by respondents.

3.1.2 ComReg's Position

ComReg notes the support expressed and will implement the EC Decision over the whole of the 3.6 GHz band at the same time.

3.2 Introducing the BWALA licensing scheme

ComReg proposed a new licensing scheme to permit fixed, nomadic and mobile use of the band. The proposed new BWALA scheme would run in parallel with the existing FWALA scheme until all licences in the band expire on or before 31 July

2017. In order to protect existing users of the band, the new BWALA licences would also operate on a local area basis. The consultation posed the following question:

Question 8: Do you agree in principle with ComReg's proposal to create new BWALA licences in the 3.6 GHz band? Please provide supporting arguments with your response.

3.2.1 Views of Respondents

Respondents welcomed the proposed BWALA licensing scheme in principle. Some concerns were raised regarding the allocation of the band to mobile services on a co-primary basis at an international level and this matter is further discussed in Section 5.3 below.

The following points were made in support of the proposed BWALA scheme:

- The services offered by existing FWALA licensees suggest that additional spectrum will be necessary as demand for services increases. The trend towards greater bandwidth as supported by the technologies foreseen for this band will also contribute to the overall demand.
- The proposed new BWALA scheme would be in conformity with European Commission Decision 2008/411/EC, which provides for use of the 3.6 GHz band for mobile, as well as fixed and nomadic, wireless access services. The current proposals therefore advance the harmonisation of use of the spectrum band on a pan-European basis, which has potential benefits in terms of economies of scale and availability of competitively priced network and terminal equipment, and allows greater flexibility of spectrum use which may increase the efficiency with which spectrum in the frequency band is used.
- Wimax certified equipment supports fixed, nomadic and mobile services. It is appropriate to align regulatory and licensing conditions to reflect the service neutral capability of the technology.

3.2.2 ComReg's Position

Noting the widespread support expressed for the introduction of the BWALA scheme ComReg will progress with the licensing of BWA systems on this basis. ComReg will now develop a Statutory Instrument establishing the BWALA scheme subject to approval by the Minister for Communications, Energy and Natural Resources.

3.3 Upgrade mechanism for FWALA licensees

ComReg proposed permitting, upon request, any existing 3.6 GHz FWALA licensee to convert its FWALA licences to BWALA licences, subject to the conditions⁵ set out in Section 7.3 of the Consultation. ComReg considers that enabling current FWALA licensees to convert to BWALA licences will achieve timely implementation of the EC Decision and ensure the most efficient use of the 3.6 GHz band. Question 16 invited respondents to comment on this proposal:

Question 16: Do you agree that existing FWALA licensees should be allowed to convert their licences to BWALA licences under the conditions⁵ (i) - (iv) [of ComReg 10/55]? Please provide supporting arguments with your response and detail any alternative if applicable.

3.3.1 Views of Respondents

The principal of permitting 3.6 GHz FWALA licences to be relinquished in return for BWALA licences under these conditions was widely supported and no objections were raised. Points raised in favour of ComReg's proposal were:

- Conversion of FWALA licences to BWALA licences should be permitted on the basis that all other aspects of the existing licences should not materially change.
- Allowing existing FWALA licensees to convert to BWALA licences enables their customers to avail in the short term of any benefits that may arise from the flexibility to also provide mobile wireless access services.

In responding to Question 16, some respondents also commented on the limited duration of the BWALA scheme and ComReg's approach to the implementation of EC Decisions pertaining to other spectrum bands. These comments are further discussed in Section 5 below.

3.3.2 ComReg's Position

ComReg notes the support for the proposal and will provide a mechanism to permit, upon request, any existing 3.6 GHz FWALA licensee to convert its FWALA licences to BWALA licences, subject to the conditions listed⁵ below.

⁵ Conditions (i) - (iv) set out in Section 7.3 of ComReg Consultation 10/55:

(i) A FWALA licensee seeking to convert to a BWALA licence will be required to surrender the relevant FWALA licence and will be issued with a new BWALA licence. The BWALA licence will permit the licensee to provide Fixed, Nomadic and Mobile services using the same spectrum assignment and in the same geographical area granted in the original FWALA licence;

(ii) Where a FWALA licensee surrenders a FWALA licence for a BWALA licence, the new BWALA licence will expire on the same date as specified in the original FWALA licence – i.e. 7 years from the original date of issue of the FWALA licence;

(iii) On 31 July 2017, all 3.6 GHz FWALA and BWALA licences shall expire utterly and cannot be renewed – see ComReg Information Notice No 10/29; and

(iv) The annual fee for a BWALA licence that replaces a surrendered FWALA licence shall be such as to reflect the increased value of the BWALA licence.

3.4 Setting of fees for future BWALA licences

In Section 8.2 of the Consultation, ComReg highlighted the scarcity of information available internationally which may help to quantify the economic value of 3.6 GHz spectrum in the context of mobile use, while ComReg also observed therein that a number of other factors, unique to Ireland, further complicate the setting of fees for future BWALA licences. ComReg came to the preliminary view that due to these factors, the increase in spectrum valuation associated with mobile use in the period up to 2017 would be incremental.

ComReg proposed that annual BWALA fees should be set at a level close to that of current FWALA fees, with the incremental benefit of mobility being reflected in a low but non-trivial fee increase. The proposed fees are shown in Table 1 below in comparison with current FWALA fees:

Bandwidth (Paired Channel)	Proposed Future BWALA Licence fee (€)	Current FWALA Licence fee (€)
Up to 7 MHz	1550	1500
Over 7 MHz and up to 14 MHz	2100	2000
Over 2 x 14 MHz and up to 2 x 28 MHz	3000	2800

Table 1: Proposed BWALA and Current FWALA Licence Fees

Questions 17 and 18 invited respondents to comment on the proposed fees and to suggest additional matters, if any, that should inform ComReg's decision on setting BWALA fees:

Question 17: Do you believe the fees set out in Table 8⁶ are appropriate to future BWALA licences? Please provide supporting arguments with your response.

Question 18: What other factors do you believe should inform ComReg's decision on the setting of appropriate annual BWALA licence fees? Please provide supporting arguments with your response.

⁶ This refers to Table 8 of ComReg Document 10/55, the contents of which are shown in Table 1 of this document.

3.4.1 Views of Respondents

Only one of the five respondents commented on the issue of fees, answering both questions jointly. The rationale for the proposed low but non-trivial increase was queried as follows:

- *“The increased fees proposed by ComReg have been set in an entirely arbitrary manner. ComReg states that a low but nontrivial increase is required and then proposes that annual fees should be increased for BWALA licences by €7.14 per paired 1 MHz. The reasoning underpinning the €7.14 charge per paired 1 MHz should be disclosed”.*
- *“No fee increase is required or justified. The administrative act of removing technology or service limitations does not in itself justify an increase in licence fees. As a matter of principle licence fees should promote efficient use of spectrum. It seems illogical that fees should be increased for licences that facilitate potentially more efficient uses of the spectrum. Higher fees could in fact discourage more efficient use of spectrum. At most, a once off administration charge could be applied if an existing licensee requests conversion to a BWALA licence effective from a date in advance of the annual renewal date of that licence”.*

3.4.2 ComReg’s Position

ComReg’s proposal to increase the annual fees for BWALA licences has three distinct advantages:

1. The administrative burden of transferring or issuing BWALA licences is reflected in the BWALA licence fees.
2. A BWALA licence confers the benefit of mobility which is not enjoyed by FWALA licensees. It is therefore proportionate that where a licensee wishes to avail of the benefit of upgrading a FWALA licence to BWALA, that any additional benefit is reflected in the fees paid.
3. The benefit conferred on a licensee wishing to convert its FWALA licence to a BWALA licence would also be proportional to the remaining term of that licence. Existing FWALA licences have differing expiry dates and hence the benefits conferred would not be uniform for all applicants wishing to convert a licence. Amending the annual usage fee is a non-discriminatory way to reflect this difference in a simple and clear fee structure.

The sole respondent on the issue of fees held that an alternative *“once off administrative charge”* would be more appropriate. While this proposal would address some matters, a unique once off fee would have to apply to each applicant, depending on the expiry date(s) of that applicant’s particular licences. Amending the annual fee is a more pragmatic approach to this issue.

ComReg also notes the comments made in relation to increasing fees and the potential this has to deter innovation. As noted by the respondent the low but non-

trivial increase amounts to an additional charge of €7.14 per 2 x 1 MHz of spectrum per annum. While the fee change will meet the administrative costs, clearly it is unlikely to deter innovation when compared with the capital investment required to deploy a new technology.

ComReg stated in Section 8.2 of the Consultation that owing to the unique factors pertaining to the 3.6 GHz band in Ireland and the lack of reliable information on mobile valuation of this spectrum elsewhere, it is not possible to determine a precise fee to reflect the additional benefit that would be enjoyed by a BWALA licensee. ComReg therefore proposed a low but non-trivial fee increment to apply to BWALA licences. Based on its analysis of the advantages of its proposals, as set out above, and in the absence of any cogent arguments to support an alternative fee, ComReg has decided to implement the BWALA fees shown in Table 1.

4 Technical Considerations and Interference Mitigation Measures

The Consultation contemplated the technical implications of implementing the EC Decision in a band that is already extensively used to provide existing services, and the impact on services in neighbouring bands.

Section 6 of the Consultation contemplated the effect that implementing the EC Decision in Ireland may have on existing users of the band and adjacent bands. Section 7 outlined the technical details of the proposed new BWALA licensing scheme that would introduce mobility to the band. ComReg invited interested parties to comment on technical aspects of the proposed BWALA scheme and its analysis of the implications for existing spectrum users.

ComReg presented its analysis of the co-existence of future mobile systems with existing users and came to the provisional conclusion that the EC Decision may be implemented without risk of significant interference. This view was generally echoed by interested parties, and the comments received are discussed below.

4.1 Protecting existing FWALA and future BWALA services

4.1.1 *Implementing the BEM and Power Limit Requirements of the EC Decision*

In the consultation ComReg proposed updating the existing FWALA Guidelines⁷ with the Block Edge Mask (BEM) in the Annex to the EC Decision. This would permit existing FWALA and future BWALA licensees in the 3.6 GHz band to operate within the increased power limits set out in the EC Decision, subject to requirements to observe the interference contour. Questions 4 and 10 invited respondents to comment in this regard.

Question 4: Do you agree with ComReg's proposal to allow existing FWALA licensees to increase power in line with the fixed and nomadic in-band power limit requirements and BEM set out in the Annex of the EC Decision? Please provide supporting arguments with your response.

4.1.1.1 Views of Respondents

Respondents generally supported the proposal to permit existing FWALA licensees to adopt the block edge mask set out in the EC Decision, subject to the interference contour limits set down in their licences. Points raised in this regard were;

- Provided its introduction is coordinated, the introduction of higher in-band power should have no adverse effects.

⁷ ComReg [Document 06/17R6](#): Revised Guidelines to Applicants for Fixed Wireless Access Local Area (FWALA) Licences.

- The continued use of interference contours would seem to allow this increase without adverse effects. Policing of such interference contours is a challenge, but this challenge already exists today.
- It ensures consistency between the terms of existing FWALA licences and the proposed new BWALA licences. The interference contour, together with co-operation and coordination between existing licensees in the band, should be sufficient to address any concerns around interference associated with higher permitted power outputs from Central Stations.

Question 10: Do you foresee any adverse implications with regard to the implementation by existing and future local area 3.6 GHz operators of the in-block and out of block requirements laid down in the EC Decision? Please provide supporting arguments with your response.

4.1.1.2 Views of Respondents

Respondents were of the opinion that the minimum requirements set out in the EC Decision are sufficient and no adverse implications are foreseen.

4.1.2 *Interference due to the Movement of Mobile Terminals*

With the introduction of BWA systems into the 3.6 GHz band there is the possibility of future users taking their mobile terminal devices out of the geographic area served by their own service provider and entering the geographic area served by another service provider licensed to operate in the same spectrum. For the reasons discussed in Section 6.2.2 of the Consultation, ComReg came to the conclusion that this is unlikely to result in harmful interference to other users. Question 5 invited respondents to put forward any other factors that should be considered in this regard.

Question 5: Are there any other factors in regard to the movement of mobile terminal devices between the service areas of local area licences that ComReg should consider? Please provide supporting arguments with your response.

4.1.2.1 Views of Respondents

Respondents in general agreed with ComReg's description of the relationship between base stations and mobile devices and were of the view that no other factors need to be considered in regard to the movement of mobile terminals. However a possible interference scenario was mooted by one respondent:

- A mobile terminal may operate in the buffer area between the service area and the interference contour. This problem should not occur with fixed terminals, as a service provider can ensure no terminal is installed outside his service area. If a mobile terminal gets service in this buffer zone, it is firstly breaking the FWALA/BWALA rules in terms of service area and secondly, as the mobile terminal has an omni-directional antenna, it may cause some interference with a base station in the adjacent service area. This may be an issue if sufficient customers try to use mobile services in the buffer zone.

Question 7: Are there any additional technical measures that should be applied/required to mitigate against the possibility of interference from proposed BWA services into existing FWALA networks? Please provide supporting arguments with your response.

4.1.2.2 Views of Respondents

Respondents agreed that no additional mitigation measures are necessary beyond those set down in the EC Decision and relevant ECC deliverables.

Question 9: Are there any other technical requirements that need to be imposed to safeguard the operation of BWA on a local area basis in the 3.6 GHz band? Please provide supporting arguments with your response.

4.1.2.3 Views of Respondents

Respondents agreed that no additional mitigation measures are necessary beyond those set down in the EC Decision and relevant ECC deliverables.

- The licensing regime and technical conditions for FWALA have been successful in encouraging the roll out of broadband services across Ireland. Therefore there are no additional technical requirements necessary to enable the operation of BWA on a local area basis beyond those proposed by ComReg.

Question 11: Given the proposed increase in e.i.r.p. field strength limits, is the current 33 dB μ V/m interference contour limit sufficient to safeguard existing operations in the 3.6 GHz band? Please provide supporting arguments with your response.

4.1.2.4 Views of Respondents

Respondents generally noted that the 33 dB μ V/m interference contour limit will suffice:

- The minimum receiver performance of BWA systems should not be dissimilar to that of existing FWALA systems.
- The onus will be on the operator to ensure that the technology deployed adheres to the technical parameters set out in the annex of the EC Decision, the interference contour associated with FWALA licensing conditions and that the network design ensures coexistence of licensees' services with those operating in adjacent FWALA/BWALA service areas.
- The current interference contour field strength limit has been successfully employed for FWALA in the 3.6 GHz band and is based on a tolerable level of interference in neighbouring service area receivers. Therefore the existing limit is likely to be sufficient to protect existing services. However the limit should be kept under review and closely monitored in the early stages following introduction of the BWALA licences.

4.1.2.5 ComReg's Position on Protecting Existing FWALA and Future BWALA Services

ComReg notes the comments made in regard to the protection of FWALA and BWALA services and the widespread support for its proposals in this regard.

ComReg notes that the permissible signal level at the interference contour is very low (6dB lower than the thermal noise floor) and thus it is extremely unlikely that mobile terminals would be capable of operating at or near the contour. Terminals in the "buffer zone" close to the edge of the service area may receive sufficient signal to operate and the onus will be on licensees to put in place measures to ensure that terminals do not contravene licence conditions by operating outside the licensed service area.

ComReg will apply the BEM as defined in the EC Decision to future BWALA licences and will permit existing FWALA licensees to operate within these limits subject to satisfying all other conditions in their licences. However, all FWALA and BWALA licences must comply with the interference contour limit stipulated in their licences. Neighbouring licensees will be the first point of contact in any case of interference and are expected to continue to coordinate to attempt to resolve any cases that arise, however licensees will be expected to notify ComReg of any significant increase in interference so that the effectiveness of the contour level may be monitored following implementation of the EC Decision.

4.2 Protecting non-FWALA/BWALA services

In Section 6.2.1.1 of the Consultation, ComReg set out its view that application of the power spectral density limits and BEM set out in the EC Decision may be introduced in Ireland without negatively impacting on other users of the 3.6 GHz band or users in neighbouring spectrum. Questions 2 and 3 sought respondents' views in this regard.

4.2.1 Non-FWALA/BWALA Services in the 3.6 GHz Band

In Ireland the non-FWALA services permitted in the 3.6 GHz band are:

- State Service;
- Short Range Devices (ultra-wideband or UWB applications);
- Radiolocation Service (radar systems); and
- Fixed Satellite Service.

Of these, only the Fixed Satellite Service operates in a primary allocation, however, currently there are no licensed Fixed Satellite stations operating in the 3.6 GHz band in Ireland.

Question 2: Do you foresee any co-existence issues with existing services or applications operating in the 3.6 GHz band when implementing the EC Decision in Ireland? Please provide supporting arguments with your response.

4.2.1.1 Views of Respondents

ComReg's position was generally supported by respondents, who made the following points:

- CEPT has already studied the potential impact of introducing mobility in ECC Report 100 and concluded that it is technically feasible under the conditions described in ECC Decision ECC/DEC/(07)02 and ECC Recommendation ECC/REC/(04)05.
- The other services identified have only a secondary allocation in the band and cannot claim protection from BWA use.

4.2.2 Services in Adjacent Spectrum Bands

Under Article 2(3) of the EC Decision, Member States are required to ensure that any provider of an ECS in the 3.6 GHz band gives appropriate protection to systems in adjacent bands. The services with frequency allocations in adjacent bands in Ireland are:

- Radiolocation Service in spectrum below 3400 MHz; and
- Fixed-Satellite Service in spectrum above 3800 MHz.

For the reasons discussed in Section 6.2.1.2 of the Consultation, ComReg set out its view that BWA systems may be introduced into the 3.6 GHz band without negatively impacting on services in adjacent bands, subject to limited coordination requirements.

Question 3: Do you agree that the requirements of the EC Decision may be implemented in Ireland without adversely affecting services operating in spectrum below 3400 MHz or above 3800 MHz? Please provide supporting arguments with your response.

4.2.2.1 Views of Respondents

ComReg's view was shared by the majority of respondents, noting that;

- The potential impact on adjacent bands and their services were sufficiently addressed in ECC Report 100.

A general concern with the Mobile Allocation was raised by one respondent who held that the introduction of BWA into the band risks interference to the Fixed-Satellite Service (FSS). However the respondent had no specific concerns with the proposed implementation of the EC Decision in Ireland and supported ComReg's proposals to protect the FSS. The following points were raised:

- There are two FSS earth stations licensed in C-band in Ireland, operating on frequencies above 3900 MHz. ComReg has undertaken a thorough analysis of the need to ensure adequate protection of these stations in enforcing

appropriate mitigation areas (i.e., protection zones around the FSS earth stations). The respondent noted that ComReg acknowledged that the deployment of new BWA stations within these areas may require coordination with the two FSS earth stations and:

“Should a co-existence issue arise between a BWA system and either of these two licensed FSS Earth Stations, ComReg will investigate the issue and the onus to provide any required mitigation measures would lie with the BWA licensee concerned.” (Text quoted from ComReg 10/55.)

- In the same vein, and as stated above, when new FSS earth stations are licensed in the future, subsequent BWA stations would also need to protect these facilities.

4.2.2.2 ComReg’s Position on Protecting Services in Adjacent Spectrum Bands

The Consultation analysed the potential impact on existing users of the band and neighbouring spectrum, and came to the preliminary position that application of the power spectral density limits and BEM set out in the EC Decision may be introduced in Ireland without negatively impacting on other users.

ComReg also stated the factors informing its view that no licence exempted⁸ VSAT terminals operate in the 3.6 GHz band, and no Radiolocation stations operate between 2850 – 3400 MHz in Ireland. As a further precaution ComReg requested that operators of such stations, if any, should inform ComReg of the station details using the forms in Annexes E and F of the Consultation. No notifications were received by ComReg and the majority of interested parties that responded to the Consultation were of the opinion that the technical requirements of the EC Decision are sufficient to protect other users of the band and adjacent bands.

ComReg notes the concerns expressed by one party regarding the principle of the Mobile and FSS co-primary Allocations in the band, but also notes the support this respondent expressed for the protection measures ComReg proposes to put in place.

Therefore, ComReg remains of the view that the technical requirements of the EC Decision may be adopted in Ireland and no reasons to revisit this position have been put forward.

⁸ [S.I. No. 295 of 2007](#): Wireless Telegraphy (Fixed Satellite Earth Stations and Teleport Facility) Regulations 2007.

5 Other Matters Raised by Respondents

In addition to the specific questions asked in the Consultation, Question 6 invited respondents to raise any other factors that ComReg should consider regarding the introduction of mobility into the band:

Question 6: Other than those described in this document, do you foresee any other issues with the introduction of mobile wireless access systems to the 3.6 GHz band? Please provide supporting arguments with your response.

5.1 Views of respondents

The majority of respondents stated that there are no other relevant factors to be considered. However, elsewhere in their submissions, some respondents commented on matters additional to those set out in the Consultation, including:

- The end date of the 3.6 GHz FWALA scheme as set out in ComReg 10/29;
- Concerns with the allocation of the band to BWA at an international level;
- The consistency of ComReg's approach to implementing EC Decisions on the harmonisation of radio spectrum;
- The expiry of FWPMA licences; and
- Future channel arrangements in the band.

ComReg addresses each of these issues below.

5.2 Comments on the 2017 end date for the FWALA licensing scheme

Future licensing of the 3.6 GHz band may require substantive changes to the current framework in order to best facilitate fixed, nomadic and mobile wireless access services. On 8 April 2010, ComReg published Information Notice 10/29 setting an end date of 31 July 2017 for the current scheme, beyond which no 3.6 GHz FWALA licences will be issued or renewed. ComReg selected this date so that all existing licences may run for their full-term. The Consultation also stated that the proposed BWALA scheme would end on the same date to ensure that the 3.6 GHz band will be unencumbered by any local area licences on that date.

Two respondents held that the 2017 end date will have an undesirable impact on investment in the short term. The following points were made in support of this view:

- The proposal that a competitive award process will be considered for 2017, without any other specific information on safeguarding the services already supported by future BWALA licenses, is likely to have a negative impact on future network investment. Investment opportunities require greater timescales than a maximum of 7 years. A use it or lose it policy may be more beneficial should ComReg be more concerned with inefficient spectrum use.

- The 7 year maximum duration of BWALA licences does not provide a sufficient investment opportunity for a BWA operator. In addition the uncertainty after the end date of the licenses will be a major barrier for investment.
- A limit of 7 years for local licensing could negatively impact broadband deployment. Clarification of the licensing timelines is critically important to ensure continued network investment.

A respondent who supported the 2017 end date held that a key advantage of the 3.6 GHz band is that there is a significant tranche of spectrum potentially available for wideband mobile systems:

- The 3.6 GHz band is one of the few bands where there is sufficient capacity available to enable several operators to deploy LTE advanced. LTE advanced requires up to 100 MHz of spectrum. ComReg's decision to end both the FWALA and BWALA scheme in July 2017 will create an opportunity for at least 340 MHz of spectrum to be made available on a national basis for mobile use.

5.2.1 ComReg's Position

ComReg notes the opposing views aired regarding the merits of the FWALA end date set out in Information Notice 10/29.

When discharging its functions under the Communications Regulation Act, 2002, ComReg has the statutory obligations to:

- encourage sustainable investment;
- promote regulatory certainty; and
- promote the efficient management and use of the radio spectrum resource.

The Communications Regulation Act, 2002 Act does not assign relative weight to these obligations and under such circumstances it falls to ComReg's discretion to decide on the appropriate action to take. ComReg must balance these objectives, and take into account that the remedy for one objective may adversely affect another.

In the case of the 3.6 GHz band, ComReg must balance the merits of promoting ongoing investment in local area licences with the requirement to formulate and provide certainty on an efficient forward-looking framework for fixed, nomadic and mobile use of the band.

FWALA has shown strong promise in Ireland since its introduction in 2003, and by 2008 accounted for more than 12% of all broadband Internet connections with subscriptions peaking at 123,456 in early 2008.

Since Q1 2008, however, the total number of FWALA subscriptions has fallen by more than 36% in a broadband market that continues to grow annually at close to 17%.

A possible reason for the decline in FWALA subscriptions observed since 2008 is the introduction of mobile broadband services launched by 3G mobile operators the preceding year. The market share of these two competing services is shown in Figure 1 below and it reflects a growing trend on the part of consumers to take up mobile broadband services.

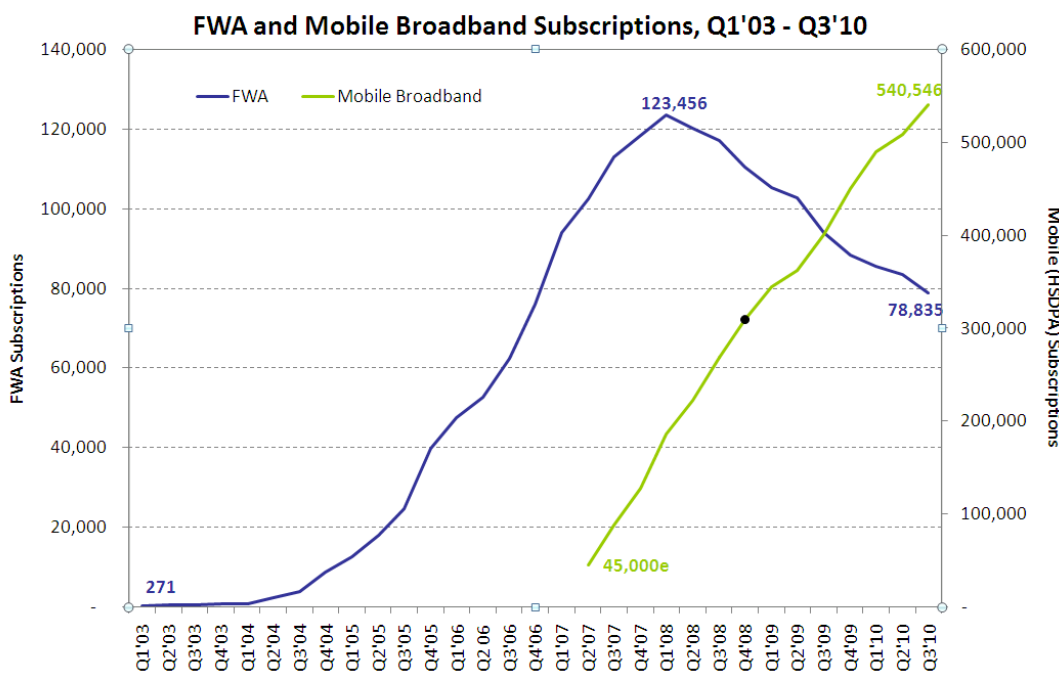


Figure 1: Source: Mobile⁹ and FWALA Subscriptions 2003 to 2010

Source: ComReg Quarterly Key Data Questionnaire.

As of Q3 2010 subscriptions to FWALA continued to contract at a rate of 16% annually, while mobile broadband has grown to account for 31% of all Internet subscriptions.

Given the continuing decline in demand for FWALA services, it is difficult to argue that the objective of promoting sustainable investment (in existing services) should take precedent over the need to implement measures to ensure the efficient management and use of spectrum in the 3.6 GHz band, particularly where such measures are required to encourage investment in mobile services for which demand is growing rapidly.

⁹ Please note that mobile broadband data prior to Q1 2009 (marked on the plot as ●) may overstate subscriptions to a relatively small extent. Therefore mobile broadband subscriptions before Q1 2009 are estimated and denoted "e".

The introduction of mobility into the 3.6 GHz band should contribute to the availability of mobile services, however the following constraints associated with current use of the band fetter mobility and curtail the benefits that it may otherwise give rise to:

1. Existing FWALA services are licensed on a local area basis and licences have differing expiry dates. Unfettered channels will not become available on a national or regional basis until this matter has been addressed.
2. Current channel assignments in the 3.6 GHz band are based on channel bandwidths of 7 MHz, 14 MHz and 28 MHz. A respondent opposed to the 2017 end-date argued¹⁰ that future assignments in the band should facilitate technologies requiring contiguous assignments of 2 x 20 MHz. Changing the channel arrangement to facilitate such technologies in an efficient manner can only be achieved when all current licences in the band have expired.
3. The market for truly mobile devices (as distinct from nomadic devices) in the 3.6 GHz band is nascent at this time, but it may be facilitated under the BWALA scheme until 2017 without imposing widespread disruption to current fixed and nomadic services in the band.
4. All operators who responded to the Consultation explicitly support the 2017 termination of all 3.6 GHz licences, so that the framework for licensing spectrum in the band may be reviewed and optimised for fixed, nomadic and mobile use, free of any constraints imposed by current local area use.

ComReg remains of the view that the 2017 end-date for all 3.6 GHz FWALA licences set down in Information Notice 10/29 provides the best approach to promoting the efficient management and use of radio spectrum and sustainable investment.

5.3 Comments on the international Mobile and FSS Allocations in the band

A respondent, who was supportive of ComReg's proposals to protect satellite users, raised some general concerns with the recent changes to the co-primary allocations in the band at an international level.

The respondent raised the following points in this regard:

- The EC Decision on the harmonisation of the 3.6 GHz band for terrestrial systems capable of providing electronic communications services requires Member States to protect existing services. It further requires that implementation of the EC Decision not preclude the use of the band by other services. This requires Member States to protect existing FSS services.

¹⁰ This point is further discussed in Section 5.6 below.

The respondent also noted a preference for Fixed-Satellite Services (FSS) remaining “(co-)primary” in the 3.6 GHz band.

5.3.1 ComReg’s Position

Consensus was reached on the mobile allocation in the band, by taking into account the views of all stakeholders at the ITU World Radiocommunications Conference of 2007, within the Radio Spectrum Committee of the European Commission and within CEPT.

It is now incumbent on EU Member States to implement the EC Decision in an appropriate manner and ComReg notes the support this respondent expressed for the proposed implementation of the EC Decision in Ireland.

5.4 Comments on the implementation of other EC Decisions

One respondent considers that ComReg is not being consistent in its approach to implementing EC Decisions concerning various spectrum bands. In particular, it states:

- *“In respect of the 900 MHz band ComReg is currently arguing that direct liberalisation of spectrum licences is not possible, unless and until a new award process, through an open auction procedure, is followed. Whilst the business case for services offered through the 900 MHz and 3.6 GHz bands are not directly comparable, the principle of the application of an EU legislative requirement on liberalisation of spectrum use is”;*
- *“In the Consultation ComReg states that there are certain curtailments in respect to the value increase associated with mobile licences within the 3.6 GHz spectrum band as reflected in ComReg’s proposed BWALA licence fees. This is reflected in the low spectrum licence fee increase. This suggests there are limited, if any, economic welfare benefits from liberalising this band in the near term. In direct contrast there is strong evidence as to the relative significantly higher economic welfare benefits anticipated from liberalisation of the 900 MHz band. It is remarkable, therefore, that ComReg would seek direct and expeditious liberalisation where it does not envisage large economic welfare benefit, and yet has delayed liberalisation where the mobile community at large has pointed out the real and tangible benefits of direct liberalisation, thereby extending the provision of services to include UMTS, and the immediate requirement to do so”;*
- *“It is equally questionable how the regulator can argue that an amendment of the application of use of licences within one particular spectrum band can be so altered, whilst not respecting the same principle within another band. As highlighted in previous submissions regarding the 900 MHz band, the liberalisation of the 900 MHz band should not be tied to the expiry of existing licences and would, therefore, urge ComReg to move forward with the liberalisation of existing 900 MHz licences”;* and

- *“The principled approach of permitting FWALA licences to be converted to BWALA licences on the basis that all other aspects of the existing licences should not materially change should also apply to existing 900 MHz licences, whereby existing licences should be liberalised up to their expiry date”.*

5.4.1 ComReg’s Position

ComReg does not agree that the proposal of differing approaches to the implementation of EC Decisions in different contexts is unjustifiable, and, in particular, feels that its proposed approaches in the current consultation and in the consultation on liberalising the use of the 900 MHz and 1800 MHz bands are based on materially different considerations, information and circumstances in the respective contexts.

ComReg would also point out that, in its consultation¹¹ on liberalising the use of the 900 MHz and 1800 MHz spectrum bands, it did in fact initially propose to liberalise existing 900 MHz and 1800 MHz licences in the first consultation paper it published in that context. However, having considered various responses to consultation and other material which suggested that that approach was not appropriate for various reasons, ComReg subsequently reviewed¹² this position.

For the sake of brevity, ComReg does not intend in this particular response to consultation to restate in detail the points made, or rehearse the material related to, the reviewing of its position as contained in the publications and material pertaining to the liberalisation of the use of spectrum in the 900 MHz and 1800 MHz spectrum bands. In that regard, however, ComReg refers readers to all of the relevant publications and materials on that matter, which are available on ComReg’s website at www.comreg.ie/gsm-lib.

5.5 Comments on the expiry of FWPMA licences

A respondent commented on ComReg Information Notice 10/64¹³ concerning the expiry of the national FWPMA licence in the 3.6 GHz band. The respondent welcomed the decision set out in ComReg 10/64 on the basis that it is:

- *“...a flexible approach taken by ComReg to spectrum licensing so as to avoid any risk of loss of service to the relatively low number of eircom USO customers utilising communications products on the basis of use of spectrum in the 3.6 GHz band.”*

¹¹ ComReg [Document 08/57](#) – Liberalising the Use of the 900 MHz and 1800 MHz Spectrum Bands.

¹² For further information see ComReg’s subsequent consultations on the 900 MHz and 1800 MHz bands, in particular consultation documents 09/14 and 09/99.

¹³ ComReg [Document 10/64](#): Expiry of Eircom’s FWPMA licence and future spectrum availability for FWALA licensing.

5.6 Comments on future channel arrangements in the 3.6 GHz band

It was held by one respondent that ComReg should amend the current channel arrangement in the band so that future 3.6 GHz licensees may obtain contiguous assignments of 2 x 20 MHz to facilitate licensees to deploy future technologies such as WiMAX 2.0.

5.6.1 ComReg's Position

ComReg notes this point and will consider future spectrum block size as part of its review of the use of the band post 2017.

6 Administrative Measures Required to Facilitate Mobility and Next Steps

This section discusses further administrative measures required to introduce mobility into the 3.6 GHz band:

- the exemption of mobile terminals;
- updating the Code of Practice on domestic frequency coordination; and
- next steps in introducing mobility to the 3.6 GHz band.

6.1 Exemption of mobile terminals

At present, while fixed and nomadic terminals are authorised under FWALA licences, the unlicensed possession or use of any device incorporating a mobile terminal would be an offence under the Wireless Telegraphy Act, 1926, as amended. In Section 7.2 of the Consultation ComReg outlined its proposals to authorise the future use of these devices in an appropriate manner and invited interested parties to comment.

Question 13: Do you agree that possession and use of 3.6 GHz band mobile terminals should be exempt from individual licensing under an appropriate authorisation regime? If not, please explain your reasoning.

Question 14: Do you agree with the above proposed licence exemption criteria to be applied to 3.6 GHz mobile terminals? Please provide supporting arguments with your response.

Question 15: Are there any other criteria that should be applied to licence-exempt 3.6 GHz mobile terminals? Please provide supporting arguments with your response.

6.1.1 Views of Respondents

Respondents supported the proposal to exempt mobile terminals under a general authorisation on the condition that terminals comply with the R&TTE Directive. The following points were raised:

- The exemption of 3.6 GHz band mobile terminals from individual licensing would ensure full consistency with the current exemption of licensing on mobile terminals operating in other spectrum bands. The exemption from licensing should not raise interference concerns given the proposed interference mitigation measures, and the restriction that licence exemption only applies to 3.6 GHz mobile terminals in full compliance with the R&TTE Directive.
- The conditions proposed by ComReg under which mobile terminals would be exempted are appropriate.

- No other criteria should be applied to licence-exempt 3.6 GHz mobile terminals.

6.1.2 ComReg's Position

ComReg notes the support to exempt 3.6 GHz mobile terminals from the requirement to hold an individual licence and will prepare an exemption order for terminal equipment meeting the following criteria:

- Full compliance with Directive 1999/5/EC (R&TTE Directive); and
- Meeting the requirements of ETSI Harmonised Standard EN 302 623 V.1.1.1 (2009-01) or affording a level of protection similar to that standard.

ComReg will now develop a Statutory Instrument exempting 3.6 GHz mobile terminals subject to approval by the Minister for Communications, Energy and Natural Resources.

6.2 Update of the Code of Practice on domestic frequency coordination

A Code of Practice¹⁴ applying to FWALA licensees has assisted in averting many cases of interference to date through coordination between licensees. ComReg intends to update this code to address the proposed BWALA scheme and Section 7.1.4 of the Consultation outlined the principals under which the code would be reviewed. Question 12 invited respondents to comment on this proposal.

Question 12: Do you agree with the principals outlined in Section 7.1.4 upon which ComReg proposes to base a revised Code of Practice for domestic frequency coordination in the 3.6 GHz band? Please provide supporting arguments with your response.

6.2.1 Views of Respondents

The following points were made regarding the principle of a Code of Practice and its amendment to encompass the proposed BWALA scheme:

- The Code of Practice approach offers a practical solution to what would be a set of difficult conditions to regulate. Interference cannot be modelled 100% accurately and optimising spectrum usage can be complimented by licensee coordination.
- The most effective use of the spectrum is usually achieved through coordination and the Code of Practice provides the basis of coordination and cooperation between licensees. This is a pragmatic approach to minimise the risk of harmful interference.

¹⁴ ComReg [Document 07/74](#): FWALA - 3.5 GHz Domestic Frequency Coordination Licensed Operator Code of Practice.

- If a truly mobile service was offered to the mass market on a regional or national basis, the Code of Practice is probably insufficient to guarantee the required quality of service. However, it is probably the best that can be implemented once a local area approach is followed.

6.2.2 *ComReg's Position*

There is notable support for continuing the policy of encouraging coordination between 3.6 GHz licensees and to update the current Code of Practice to reflect the use of mobile services. ComReg will therefore update ComReg 07/74 as outlined in Section 7.1.4 of the Consultation.

6.3 Next steps

In Q2 of 2011 ComReg will draft two new Statutory Instruments for approval by the Minister for Communications, Energy and Natural Resources, to:

- establish the BWALA licensing scheme; and
- exempt 3.6 GHz mobile terminals as discussed in Section 6.1.

In Q2 2011 ComReg will update the Code of Practice on domestic frequency coordination as discussed in Section 6.2 above.

The 3.6 GHz FWALA and BWALA licensing schemes will end on 31 July 2017 and all remaining licences in the band will expire on that date. ComReg will continue with its review of the framework for the use of 3.6 GHz spectrum beyond 2017. This includes consideration of matters such as:

- licence conditions;
- licence fees;
- frequency channel arrangements;
- whether channels will be licensed on a local, regional or national basis; and
- appropriate mechanisms for the future assignment of 3.6 GHz spectrum to licensees;

ComReg's decision on these matters will strongly influence how the 3.6 GHz band will be used to meet consumer and business demand for innovative high speed wireless services in the future. This decision must be based on accurate information and developing market trends and accordingly further consultation is envisaged. ComReg is also cognisant of the need to provide stakeholders with early visibility of the future framework for licensing in the band and at this time ComReg is of the view that 2013 is an appropriate timeframe to consult on use of the band after 2017.

Appendix A – Abbreviations and Acronyms

BEM	Block Edge Mask
BWA	Broadband Wireless Access
BWALA	Broadband Wireless Access Local Area
CEPT	Conference of European Postal and Telecommunications Administrations
CS	Central Station
EC	European Commission
ECC	Electronic Communications Committee (of CEPT)
ECS	Electronic Communications Service
FSS	Fixed-Satellite Service
FWA	Fixed Wireless Access
FWALA	Fixed Wireless Access Local Area
ITU	International Telecommunication Union
MoU	Memorandum of Understanding
MWA	Mobile Wireless Access
NWA	Nomadic Wireless Access
OB	Outside Broadcasting
PMSE	Programme making AND Special Events
SAB/SAP	Services Ancillary to Broadcasting / Services Ancillary to Programme making
TS	Terminal Station