



Commission for
Communications Regulation

Submissions to Consultation

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

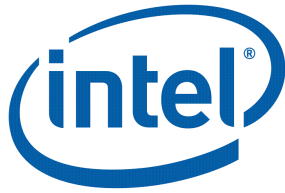
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To:



Commission for
Communications Regulation

Intel Corporation
EMEA Communications Team
Global Public Policy

Date: 3rd Sept 2010

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

To:

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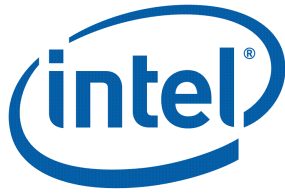
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Date: Friday, 03 September 2010

Intel welcomes the opportunity to provide our views on the ComReg proposals for the Implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 – 3800 MHz band. This document sets out Intel's response to the specific areas of interest and expertise.



Q. 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.

Intel Response to Question 1.

Intel has been actively involved in the development of BWA not only in Ireland but across Europe as well as globally. The vibrant market created in Ireland by many local and regional players demonstrates that it is time to implement the main principles of the EC Decision and in particular mobility. The predominant technology being deployed is capable of supporting mobility and features associated with mobility, it is therefore appropriate for ComReg to remove unnecessary and artificial licence restrictions and adopt a technology and service neutral policy in line with the EC Decision.

Q. 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.

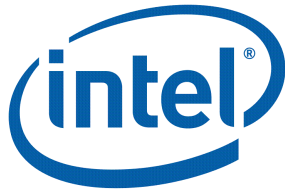
Intel Response to Question 2.

As part of the preparation work of the EC Decision it was necessary for CEPT to consider the technical attributes of fixed/nomadic and mobile technologies. CEPT studied the potential affect of introducing mobility and concluded that it was technically feasible under the technical conditions described in ECC Decision ECC/DEC/(07)02 and ECC Recommendation ECC/REC/(04)05. Intel therefore endorses the introduction of the EC Decision and does not foresee any additional requirements necessary to coexist with the existing services and applications.

Q. 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.

Intel Response to Question 3.

As with the response to Q2 the preparation work also included studies on the effects to adjacent bands and their services and applications. ECC report 100 provides the basis of those studies and Intel were actively involved in the development of the report. Intel does not foresee any adverse effect as a result of introducing the conditions of the EC Decision.



Q. 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.

Intel Response to Question 4.

Intel supports the introduction of higher in-band power and provided its introduction is coordinated then there should be no adverse affects.

Q. 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.

Intel Response to Question 5.

No other factors should be necessary and the description of the relationship between base station and mobile devices provided by ComReg provides an accurate description.

Q. 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.

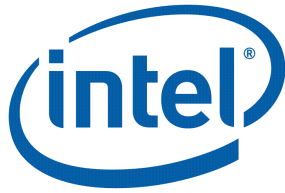
Intel Response to Question 6.

Intel is unaware of any other related issues.

Q. 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.

Intel Response to Question 7.

Intel does not consider any additional technical measures are necessary. The minimum technical conditions as described in ECC Decision ECC/DEC/(07)02 and ECC Recommendation ECC/REC/(04)05 should be sufficient.



Q. 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.

Intel Response to Question 8.

Intel supports the additional spectrum availability for BWA services and in particular in the 3600 – 3800 MHz band. The current services offered by existing licensees suggest that additional spectrum will be necessary as demand for services increase. The trend towards greater bandwidth as supported by the technologies foreseen for this band will also contribute to the overall demand.

Q. 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.

Intel Response to Question 9.

For the similar reasons stated in Intel's response to Q7 there are no additional technical conditions required. The FWALA licenses have served the market well too date and the introduction of BWA pose no additional requirement for additional measures.

Q. 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.

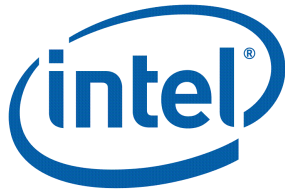
Intel Response to Question 10.

The minimum requirements as defined by the EC Decision are sufficient and no adverse implications are foreseen.

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

Intel Response to Question 11.

Intel does not have detailed knowledge of the field strength approach adopted by ComReg for FWALA licensing. It is assumed that a minimum receiver performance has been selected, the systems deployed for BWA should not be dissimilar.



Q. 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.

Intel Response to Question 13.

Intel supports the Code of Practice approach which offers a practical solution to what would be a set of difficult conditions to regulate. Intel recognises that interference cannot be modelled 100% accurately and optimising spectrum usage can be complimented by licensee coordination.

Q. 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.

Intel Response to Question 13.

Intel supports the licence exempt status of mobile devices and the detailed explanation given by ComReg.

Q. 14. Do you agree with the above proposed licence exemption criteria to be applied to 3.6 GHz mobile terminals? If not, please explain your reasoning.

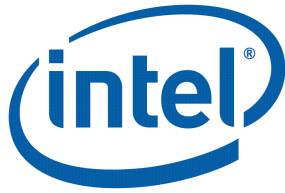
Intel Response to Question 14.

Intel agrees with the proposed criteria and has nothing further to add.

Q. 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.

Intel Response to Question 15.

Intel agrees with the proposed criteria and has nothing further to add.



Q. 16. Do you agree that existing FWALA licensees should be allowed to convert their licences to BWALA licences under the conditions (i) - (iv) above? Please provide supporting arguments with your response and detail any alternative if applicable.

Intel Response to Question 16.

The proposal to align all licenses with an end date of 2017 is more likely to have a negative impact on future network investment. Investment opportunities require greater timescales than a maximum of 7 years to attract the right level of support. Intel therefore concludes that the full potential for BWA deployment across Ireland maybe compromised by this regulatory constraint. ComReg suggests 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. Intel considers the current plans as being inadequate with insufficient clarity on the future security of services rolled out to Irish citizens as well as the infrastructure supporting the services. A use it or lose it policy maybe more beneficial should ComReg be more concerned with inefficient utilization of the scare spectrum resource.

Q. 17. Do you believe the fees set out in Table 8 are appropriate to future BWALA licences? Please provide supporting arguments with your response.

Intel Response to Question 17.

Intel does not as policy position comment on specific licence fee related questions.

Q. 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.

Intel Response to Question 18.

Intel does not as policy position comment on specific licence fee related questions.

2 Meteor Mobile Communications Ltd.



Response to Consultation

**The Implementation of EC Decision 2008/411/EC and Introduction of
Mobility in the 3400-3800 MHz Band**

Document No: 10/55

3 September 2010

Introduction

Meteor welcomes ComReg's proposals to ensure that Ireland respects EC Decision 2008/411/EC, Commission Decision of 21 May 2008 on the harmonisation of the 3400-3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community. The Decision mandates the introduction of mobility to the 3400-3800 MHz band and, as such, should be respected in all Member States. The action being proposed by ComReg, therefore, will ensure compliance with agreed European norms.

In principle Meteor is supportive of the decision taken by ComReg to allow mobile wireless access systems to operate in the 3.6 GHz band in addition to fixed and nomadic systems. The proposals to simultaneously open up both 3400-3600 and 3600-3800MHz is also supported.

In the main, therefore, this response broadly welcomes the proposed way forward by ComReg and will focus on the technical issues raised within the consultation highlighting, where appropriate, technical considerations and issues in respect to tenure and duration of licences.

On a purely commercial basis, it is questionable that a valid business case exists today for a mobile broadband network utilising 3.6 GHz. This is due to the poor propagation characteristics and indoor penetration capability of such a high frequency compared to the 800, 900, 1800, 2100 and even 2600 MHz bands. However, the ever increasing demand for mobile broadband capacity, particularly in urban areas, will eventually exhaust the capacity of these lower bands and will drive a requirement for the 3.6 GHz band in the medium to long term.

One of the key advantages of the 3.6 GHz band is that there is close to 400 MHz of spectrum potentially available. It 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, but offers the potential of delivering peak speeds of 1 Gbit/s. For this reason, Meteor strongly supports ComReg's decision to end both the FWALA and BWALA scheme in July 2017, as this create an opportunity for at least 340 MHz of spectrum to be made available on a national basis for mobile use.

Consistency of regulatory approach

On a more general note, however, certain concerns have arisen as to the approach adopted by ComReg in respect to the 3.6 GHz band as compared to the liberalisation of other, potentially more economically and strategically important, spectrum bands. In this context, Meteor will both highlight and question why direct application and liberalisation of use should apply to licensees of one particular band and not licensees of another.

Whilst the process outlined by ComReg ensures that Ireland respects and applies the EC Decision, and Meteor both welcomes and encourages application of this Decision, a more fundamental question does arise as to whether the regulator is applying a consistent approach as regards the application of EU Decisions effectively liberalising spectrum use.

The current consultation acknowledges the need to apply EC Decision No: 2008/411/EC in Ireland the application of which will effectively extend use of the band in question to mobile applications, ensuring that licensees, on receipt of a new modified licence, are permitted to offer mobile licensed services.

What is key here is that ComReg proposes to do this through the award of an amended licence. Current licensees are invited to apply for a new licence, replacing the original Fixed Wireless Access Local Area Licences (FWALA) with a Broadband Wireless Access Local Area Licence (BWALA). On receipt of which, the licensee can proceed to offer local mobile area services.

However, compare this approach to the wholly different method proposed to ensure application of Commission Decision on the harmonisation of the 900 and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community (2009/766/EC), which liberalises use of the 900MHz and 1800 MHz spectrum bands. Here, Meteor would contend, the regulator has taken a somewhat different and in many ways contradictory method to the application of flexibility of licence use and compliance (or indeed non-compliance) with an EC Decision which requires necessary national administrative changes. In respect to the 900 MHz band the regulator is currently arguing that direct liberalisation of use is not possible, unless and until a new award process, through an open auction procedure, is followed. Whilst Meteor does not contend that the business case for services offered through the 900MHz and 3.4-3.8GHz bands are directly comparable, the principle of the application of an EU legislative requirement on liberalisation of spectrum use is.

ComReg states in the consultation 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 the regulator 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 900MHz band, Meteor does not accept that the liberalisation of the 900MHz band should be tied to licence expiry of existing licences and would, therefore, urge ComReg to move forward with the liberalisation of existing 900MHz licences.

Response to Consultation Questions

The following outlines Meteor's position in respect to the specific questions posed within the Consultation

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

No

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.

No. Existing fixed and nomadic broadband services will still be under the control of the same operator, who plans to deploy new mobile services in his licensed spectrum. The onus is 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 his network design ensures coexistence of his own services and those in adjacent FWALA/BWALA service areas.

ComReg's analysis of the current spectrum usage, bearing in mind the main conclusions of ECC report 100 would indicate that EC decision may be implemented, once the spectral density limits and BEM are applied.

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.

Based on CEPT studies and ComReg's analysis of the current situation, there seems very little risk of interference.

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

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.

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 argument with your response.

One point that needs to be considered is a mobile terminal operating 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.

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

No, Meteor does not foresee any other issues.

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.

No.

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.

Yes.

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.

No.

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.

No, we do not foresee any adverse implications.

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

There should be no issue with increasing the EIRP, as per annex, provided the existing interference contour is respected.

- 12.** Do you agree with the principles 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.

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 QOS. However, it is probably the best that can be implemented once a local area approach is followed.

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

Agree

- 14.** Do you agree with the above proposed licence exemption criteria to be applied to 3.6 GHz terminal? If not, please explain your reasoning.

Agree

- 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.

No.

- 16.** Do you agree that existing FWALA licences should be allowed to convert their licences to BWALA licences under the conditions (i)-(iv) above? Please provide supporting arguments with your response and detail any alternative if applicable.

Meteor fully agrees that the option to convert FWALA licences to BWALA licences under the principles that all other aspects of the existing licences should not materially change. This principled approach should also apply to existing 900 MHz licences, whereby existing licences should be liberalised up to their expiry date.

- 17.** Do you believe the fees set out in Table 8 are appropriate to future BWALA licences? Please provide supporting arguments with your response.

ComReg proposes that BWALA licence fees should be set by reference to FWAL fees plus a small upward adjustment. ComReg proposes this approach on the basis that the increase in BWALA annual fees reflects ComReg's perception of the low economic value of adding mobility to 3.6 GHz licences under the current FWALA/BWALA licensing criteria.

Meteor objects to the proposed approach for two reasons. Firstly the increases proposed by ComReg have been set in an entirely arbitrary manner. ComReg states that a low but non-trivial increase is required and then proposes that annual fees should be increased for BWALA licences by €7.14 per paired MHz. We would welcome visibility of the reasoning underpinning the €7.14 charge per paired MHz.

Secondly, and more importantly, it is arguable that no fee increase is required or justified at this time. 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.

- 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.

Please see the response to question 17, above.

3 SES S.A.

2 September 2010

Commission for Communications Regulation (ComReg) Consultation on the implementation of EC Decision 2008/411/EC and Introduction of Mobility to the 3400 – 3800 MHz Band

INTRODUCTION

SES appreciates the opportunity to comment on ComReg's implementation of EC Decision 2008/411/EC (EC Decision.) SES has particular concern over the allocations in the 3400 - 3800 MHz band. It is important that allocation of this band for satellite services remain (co-)primary for fixed satellite services (FSS) in ITU Region 1. Below we provide comments on the general use of the band and, more specifically, on the EC Decision.

USE OF THE C-BAND FOR FSS

As ComReg is aware, for over forty years the 3400 - 4200 MHz frequency bands (C band) have been used by the satellite sector for FSS. Today, there are approximately 160 geostationary satellites operating in this band providing essential services to consumers around the world. In addition, more satellites using the C-band are under construction. Governments, non-governmental organisations (NGOs), intergovernmental organisations (IGOs), businesses as well as individual consumers all depend on and benefit from the crucial services that are provided by FSS in the C-band. However, increased use of this spectrum for terrestrial services such as WiMAX, limits the ability of FSS to use and causes harmful interference into satellite services using this band.

Today, satellite operators and constructing eleven (11) satellites that include C-Band payloads that will serve Europe within the next 3 years. Of these, the SES spacecraft include:

Satellite	Launch Date	Number of Transponders	Frequencies
NSS-14	2010	52	3625-4200 MHz
Sirius 5	2011	24	3640-4200 MHz

The existing and planned use of the 3600-4200 MHz C-Band spectrum as well as the planned Galileo project demonstrate that C-Band will remain an important band for the satellite sector. Nevertheless, the EU has opened the band 3400-3800 MHz to fixed and mobile terrestrial Broadband Wireless Access (BWA) systems. This decision results in the need to protect satellite networks from resulting interference and the need to assure that critical coordination takes place.

INTERPRETATION OF EUROPEAN COMMISSION DECISION 2008/411/EC

The EC Decision on the harmonisation of the 3400 - 3800 MHz frequency 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.

SES notes that Article 1 of the EC Decision states that the harmonisation will occur, 'without prejudice to the protection and continued operation of other existing use in this band'.¹ Article 2 states that Member States shall designate and make available the 3400-3600 MHz and 3600-3800 MHz bands for terrestrial electronic communications networks but 'on a non-exclusive basis'.²

Furthermore, the EC Decision makes it clear that it does not seek to override the ITU Radio Regulations (ITU RR) or impede Member States from meeting their international obligations. The ITU RR are specifically referenced in the EC Decision, with Recital 7 noting the importance of allowing access to the spectrum of services allocated in the ITU RR to the 3400 - 3600 MHz and 3600 - 3800 MHz bands. Recital 7 states that:

"The fact that there are other existing applications within these bands ... does not preclude the future use of these bands by other systems and services to which these bands are allocated in accordance with the ITU Radio Regulations (designation on a non-exclusive basis). Appropriate sharing criteria for coexistence with other systems and services in the same and adjacent bands have been developed in ECC Report 100. This report confirms, inter alia, that sharing with satellite services is often feasible considering the extent of their deployment in Europe, geographical separation requirements and case-by-case evaluation of actual terrain topography."

This section requires that, within EU Member States, the 3400 - 3800 MHz band be available for services allocated in accordance with the ITU RR. FSS is allocated to this band in Region 1, and therefore, in all EU Member States. We therefore appreciate and commend ComReg in recognizing the need to:

"treat any future applications [to license FSS earth stations] in accordance with the ITU Radio Regulations."

¹ *Article 1:* This Decision aims at harmonising, without prejudice to the protection and continued operation of other existing use in this band, the conditions for the availability and efficient use of the 3 400-3 800 MHz band for terrestrial systems capable of providing electronic communications services.

² *Article 2:* 1. No later than six months after entry into force of this Decision Member States shall designate and make available, on a non-exclusive basis, the 3 400-3 600 MHz band for terrestrial electronic communications networks, in compliance with the parameters set out in the Annex to this Decision. 2. By 1 January 2012 Member States shall designate and subsequently make available, on a non-exclusive basis, the 3 600-3 800 MHz band for terrestrial electronic communications networks, in compliance with the parameters set out in the Annex to this Decision.

INTERFERENCE ISSUES

Studies leading up to the World Radiocommunication Conference 2007 (WRC-07) provide evidence of the extreme difficulties that would be caused by allowing FSS and BWA services to share the same frequency band, notably when these include both fixed and mobile wireless access.³ This evidence led the WRC to reject a global allocation for IMT and to ensure that satellite services remained in the 3400 – 4200 MHz bands to continue critical satellite services.⁴

However, the interference currently suffered by FSS in various countries of the world due to WiMAX deployed in the 3400 – 3800 MHz band using the *fixed* allocation in the ITU RR is of increasing concern to FSS operators and their end-users. Evidence indicates a clear threat to the quality of service the FSS can provide in the band. We believe that action must be taken to ensure that where users of BWA (fixed or mobile)⁵ and users of FSS share the same frequency band, steps must be taken to mitigate harmful interference to FSS users.

Under the agreement reached at WRC-07, new BWA entrants can operate in the 3400 - 3800 MHz frequency band if they mitigate any harmful interference they cause to existing services, such as FSS. Coordination criteria need to be strictly observed, ensuring that BWA deployments protect existing C-band installations. The ITU has concluded that in order to provide an FSS receive earth station with protection from interference in both long-term and short-term propagation conditions, a co-frequency IMT base station must maintain a minimum distance separation of at least several tens of kilometres and potentially hundreds of kilometres relative to the FSS receive earth station.

ComReg has indicated that there is no licensed FSS earth station at 3.6 GHz in Ireland, at present. However, if new FSS earth stations are licensed in the future, protection will need to be assured vis-à-vis BWA systems or stations that would come later. To this extent, we support and agree with ComReg's position that:

“the EC Decision requires Member States to ensure that other existing and future systems in the 3.6 GHz band can co-exist with new BWA systems. Where appropriate, ComReg intends to continue to protect and coordinate with the other services in the 3.6 GHz band, to ensure that they are afforded the appropriate level of protection.”

OUT-OF-BAND INTERFERENCE

SES notes that ComReg is aware of the fact that BWA services deployed in the band 3400 – 3800 MHz may not just cause harmful interference to other services in the same band but also may affect (and can cause harmful interference to) services operating in the adjacent bands, specifically satellite services above 3800 MHz.

³ See ITU-R Report M.2109.

⁴ More details about the range of critical services which our industry provides, and the problems of satellite and terrestrial compatibility as sustained by ITU studies can be found from: www.fss-toolkit.com

⁵ BWA is defined by the ITU as including Mobile Wireless Access (MWA), Nomadic Wireless Access (NWA), and Fixed Wireless Access (FWA). This seems to match with the Broadband Wireless Access Local Area (BWALA) defined by ComReg.

The impact of out-of-band interference into an FSS receive earth station was investigated by the ITU and it was found that the minimum required separation distances here are also up to tens of kilometres (with no guard band) which decrease as the guard band increases.⁶ The studies showed that with a sufficient guard-band, the minimum separation could be reduced. The risk for out-of-band interference can be mitigated using the same techniques as co-frequency interference.

ComReg indicates that there are two (2) FSS earth stations licensed in C-band in Ireland, above 3900 MHz (*i.e.*, with a 100 MHz guard-band). We understand that, based on the ECC Report 100, 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). We note that ComReg has notably 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.”

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.

CONCLUSION

There are far-reaching consequences to the interpretation of the EC Decision on the introduction of BWA in the band 3400-3800 MHz, not least how it will influence the interpretation of future EC decisions. Although SES remains fundamentally unsatisfied by the opening of such a critical band to mobile terrestrial systems in Europe, SES commends ComReg for its careful analysis of the situation affecting the C-band. We further appreciate ComReg's recognition that future development in this band must be addressed with full consideration to the ITU RR, both within the band and in adjacent bands.

SES remains available to provide further comment or to respond to any questions if required by ComReg.

⁶ see ITU-R Report M.2109.

4 Vodafone Ireland Ltd.



Vodafone Response to the ComReg Consultation on the Implementation of ECC Decision 2008/411/EC and Introduction of Mobility to the 3400-3800 MHz Band

Introduction

Vodafone welcomes the opportunity to respond to this consultation on the proposed introduction of mobility to the 3400 MHz – 3800 MHz band. It is our view that the removal of the current restrictions on the use of this band by mobile wireless access systems would be objectively justified as it would conform with the provisions of EC Decision 2008/411/EC, advance the harmonisation of use of the spectrum band on a pan-European basis, and may increase the efficiency with which spectrum in the frequency band is used.

Vodafone's views in relation to the issues arising from ComReg's proposed approach as set out in the consultation document, including the detail of the proposed new licensing framework for BWALA licences, are set out in response to the consultation questions below.

On the issue of ComReg's decision on the treatment of Eircom's national FWPMA Licence in the 3.6 GHz band, as set out in ComReg Information Notice 10/64, Vodafone welcomes in principle the 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.

Response to Consultation Questions

Q1. 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.

No. Vodafone agrees that the EC Decision should be implemented for both the 3400-3600 MHz and 3600-3800 MHz sub-bands at the same time as there does not appear to be the potential for this approach to have an adverse impact on other existing uses of the spectrum.

Q2. 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.

Vodafone does not consider that any co-existence issues between new BWA systems and other existing services or applications operating in the 3.6 GHz band arise, primarily as the other services identified have only a secondary allocation in the band and can not claim protection from BWA use.

Q4. 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.

Yes. This should ensure consistency between the terms of existing FWALA licences and the proposed new BWALA licences. The interference contour, together with co-operation and co-ordination between existing licensees in the band, should be sufficient to address any concerns around interference associated with higher permitted power outputs from Central Stations.

Q6. Other than those described in this document, do you foresee any other issues with the introduction of mobile wireless access systems in the 3.6 GHz band? Please provide supporting arguments with your response.

No.

Q7. 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.

It is not apparent that any additional technical measures are required to mitigate against the possibility of interference from proposed BWA services into existing FWALA networks. Existing measures are likely to be sufficient to protect against interference.

Q8. 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.

Vodafone agrees in principle with the approach outlined by ComReg as the creation of the proposed new BWALA licensing scheme would be in conformity with European Commission Decision 2008/411/EC, which provides for use of the 3.6 GHz band for delivery of mobile wireless access, as well as the current 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 allow greater flexibility of spectrum use which may increase the efficiency with which spectrum in the frequency band is used.

Q10. 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.

No.

Q11. Given the proposed increase in e.i.r.p. field strength limits, is the current 33 dB u V/m interference contour limit sufficient to safeguard existing operations in the 3.6 GHz band? Please provide supporting arguments with your response.

Vodafone considers that the current interference contour limit is likely to be sufficient to safeguard existing operations in the 3.6 GHz band. However this should be kept under review and closely monitored in the early stages following introduction of the BWALA licences.

Q13. 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.

Yes. 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.

Q14. Do you agree with the above proposed licence exemption criteria to be applied to 3.6 GHz mobile terminals? If not, please explain your reasoning.

Please see the response to question 13.

Q15. Are there any other criteria that should be applied to licence-exempt 3.6 GHz mobile terminals? Please provide supporting arguments with your response.

Vodafone does not consider that there are any other criteria that are necessary to apply to licence-exempt 3.6 GHz mobile terminals.

Q16. Do you agree that existing FWALA licensees should be allowed to convert their licences to BWALA licences under the conditions (i) – (iv) above? Please provide supporting arguments with your response and detail any alternative if applicable.

Vodafone agrees that existing FWALA licensees should be allowed to convert their licences to BWALA licences under the proposed new licensing scheme as this would allow existing licensees and their customers to avail in the short term of any benefits that may arise from the flexibility to also provide mobile wireless access services using frequency assignments in the 3.6 GHz band.

5 Wimax Forum.



3rd September 2010

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**The Implementation of EC Decision 2008/411/EC and Introduction of
Mobility to the 3400 – 3800 MHz Band
WiMAX Forum[®] Response**

The WiMAX Forum^{®1} welcomes the opportunity to provide its views and comments concerning the public consultation document identified above.

The WiMAX Forum is an industry-led, not-for-profit organisation formed to certify and promote the compatibility and interoperability of broadband wireless products based upon the harmonized IEEE 802.16/ETSI HiperMAN standard. A WiMAX Forum goal is to accelerate the introduction of these systems into the marketplace. WiMAX Forum Certified[™] products are interoperable and support broadband fixed, portable and mobile services. Along these lines, the WiMAX Forum works closely with service providers and regulators to ensure that WiMAX Forum Certified systems meet customer and government requirements. For more information about the WiMAX Forum and its activities, please visit www.WiMAXForum.org.

In Annex 1, the WiMAX Forum is pleased to submit comments on the consultation document identified above.

Yours Sincerely

WiMAX Forum
Chair - Regulatory Working Group

¹ "WiMAX," "Mobile WiMAX," "Fixed WiMAX," "WiMAX Forum," the WiMAX Forum logo, "WiMAX Forum Certified," and the WiMAX Forum Certified logo are trademarks of the WiMAX Forum.

Annex 1

Q. 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.

WiMAX Forum Response:

Noting the current usage in Ireland there is a strong argument to implement the EC Decision for both sub-bands at the same time, the WiMAX Forum is fully supportive of this approach.

Q. 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.

WiMAX Forum Response:

The WiMAX Forum recognizes the work undertaken by the CEPT which produced a report on BWA. This report concludes that the deployment of fixed, nomadic and mobile networks is technically feasible within the frequency band 3.4-3.8 GHz under the technical conditions described in ECC Decision ECC/DEC/(07)02 and ECC Recommendation ECC/REC/(04)05. The WiMAX Forum fully supports these conclusions and does not foresee any further co-existence issues.

Q. 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.

WiMAX Forum Response:

Yes. The WiMAX Forum also recognizes the work undertaken and reported in ECC Report 100 where the coexistence issues were considered for services typically operating below 3400 MHz and above 3800 MHz. The conclusions drawn from those studies suggest that no adverse impact is foreseen

Q. 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.

WiMAX Forum Response:

The WiMAX Forum supports this approach and does not consider any technical issues to prevent the adoption of the higher in-band power.

Q. 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.

WiMAX Forum Response:

ComReg have described the interaction between mobile and base station accurately. The WiMAX Forum is not aware of any other factors to take into account for a mobile device movement between service areas.

Q. 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.

WiMAX Forum Response:

The WiMAX Forum is not aware of any other issues that would impact the introduction of mobile wireless systems.

Q. 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.

WiMAX Forum Response:

No. The WiMAX Forum does not consider any additional technical measures are necessary.

Q. 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.

WiMAX Forum Response:

Yes. WiMAX Certified equipment profiles are derived from the IEEE 802.16.2009 standard which supports all service modes (fixed/nomadic/mobile). Therefore the WiMAX Forum considers it appropriate to align regulatory and licensing conditions to reflect the service neutral capability of the technology.

In April 2010 the WiMAX Forum announced **WiMAX 2** as the next phase of WiMAX technology based upon the draft IEEE 802.16m standard, which builds upon IEEE 802.16e by adding new capabilities while maintaining backward compatibility. WiMAX 2 delivers higher system capacity with peak rates of more than 300 Mbps, lower latency and increased VoIP capacity, meeting the International Telecommunications Union (ITU) requirements for 4G or "IMT-Advanced."

Further information can be found at:

http://www.wimaxforum.org/sites/wimaxforum.org/files/page/2009/12/wimax_2_collaboration_initiative_qa_april_12_2010.pdf

Q. 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.

WiMAX Forum Response:

The WiMAX Forum understands that the licensing regime and technical conditions for FWALA have been successful in encouraging the roll out of broadband services across Ireland. Therefore the WiMAX Forum believes there are no additional technical requirements necessary to enable the operation of BWA on a local area basis. The WiMAX Forum considers the proposals made by ComReg are sufficient.

Q. 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.

WiMAX Forum Response:

The EC Decision technical conditions will adequately cover the minimum requirements for the avoidance of harmful interference.

Q. 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.

WiMAX Forum Response:

The WiMAX Forum understands that the current interference contour field strength limit has been successfully employed for FWALA licensing and is based on a tolerable level of interference in neighboring service area receivers. This is based on the characteristics of the receivers rather than transmitter power. Therefore the WiMAX Forum considers the existing limit sufficient at least for the time being however, it could be appropriate to review this once detailed deployment experience becomes available.

Q. 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.

WiMAX Forum Response:

The basis for the most effective use of the spectrum is usually through coordination and the ComReg Code of Practice provides the basis of coordination and cooperation between licensees. The WiMAX Forum is supportive of this pragmatic approach to minimise the potential risk of harmful interference.

Q. 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.

WiMAX Forum Response:

Yes, the WiMAX Forum fully supports a licence exempt approach for the reasons stated by ComReg.

Q. 14. Do you agree with the above proposed licence exemption criteria to be applied to 3.6 GHz mobile terminals? If not, please explain your reasoning.

WiMAX Forum Response:

The WiMAX Forum agrees with the criteria for licence exemption.

Q. 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.

WiMAX Forum Response:

The WiMAX Forum does not consider that any other criteria are necessary.

Q. 16. Do you agree that existing FWALA licensees should be allowed to convert their licences to BWALA licences under the conditions (i) - (iv) above? Please provide supporting arguments with your response and detail any alternative if applicable.

WiMAX Forum Response:

The WiMAX Forum has a major concern with the proposal to align all licenses with an end date of 2017. We believe this will adversely affect the business case for BWA deployment in Ireland. The 7 year maximum validity of the licence 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. The investment community does not like uncertainty. The novel approach taken by ComReg to deliver local licensing has proved a success and has enabled a competitive environment. Introducing a limit of 7 years for local licensing could negatively impact broadband deployment for Ireland's citizens.

Therefore, ComReg should ensure that replacement for the FWALA scheme builds upon the leading position and momentum Ireland has achieved in relation to WiMAX deployment and customer take up.

ComReg should also ensure that 3.4-3.8GHz spectrum is to be allocated in sufficient block size to ensure WiMAX operators are positioned to commercially roll-out WiMAX 2.0 services. WiMAX 2.0 will require up to 20MHz per channel to deliver a higher system capacity.

The WiMAX Forum would like to reiterate that the timelines for clarification of the licensing are critically important to ensure continued network investment should be a high priority for ComReg.

Q. 17. Do you believe the fees set out in Table 8 are appropriate to future BWALA licences? Please provide supporting arguments with your response.

WiMAX Forum Response:

The WiMAX Forum as a policy position refrains from responding to questions relating to specific licence fees.

Q. 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.

WiMAX Forum Response:

The WiMAX Forum as a policy position refrains from responding to questions relating to licence fees.