Commission for
Communications Regulation

Submissions to Consultation

Release of Additional Spectrum in the 10 GHz band

Submissions received from respondents

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Response to Consultation:	**09/36**

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1 Digiweb

Response to Consultation Paper:

Release of Additional Spectrum in the 10 GHz Band

Please also refer to Annex A : ANNEX A IS NOT FOR PUBLICATION

Overview

Digiweb Ltd welcomes the release of additional spectrum in the 10 GHz band including the possible use of the band 10.0 GHz to 10.154 GHz for fixed, mobile or radiolocation services, and the opportunity to respond to the Consultation Paper.

Digiweb is one of Ireland's leading telecommunications and internet services providers, an indigenous business investing in independent infrastructure to deliver wide-reaching and innovative services to its customers nationwide. Digiweb has a broad service capability from its own infrastructure including Fixed and Mobile Wireless Broadband, Fibre, Satellite, Data Centre and Web Hosting, and offers various fixed line services through wholesale relationships.

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

Digiweb continually drives competition in the market focusing on innovation, quality, and value as our differentiators in delivering broadband services. We recognise the growing customer demand for higher bandwidths to support changes in applications and consumer behaviour. We are cognisant of Ireland's position relative to the global market place and pride ourselves in the part we play to ensure that Ireland continues to rise to the challenges offered. Digiweb provides high speed, high quality internet services (measured on downlink and uplink speeds, latency, and jitter).

Digiweb believe that it is necessary to continue to increase the service offering speeds while maintaining quality in order to meet consumer expectations and

demands. To this aim we propose to use the additional spectrum to offer high speed internet, VPN, voice and video services. Digiweb employs Data Over Cable Service Interface Specifications (DOCSIS®) to deliver services on its national network. It has been demonstrated that the most successful and cost-effective method for providing high-speed data services is via cable modems compliant with the DOCSIS specifications.

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

Digiweb believe that the majority of this spectrum is only suitable for downlink operation. As outlined in Annex A the filters required to allow for duplex operation within the band would drive the end product to be commercially ineffective. This being the case operators will require existing spectrum to pair with this new downlink spectrum. As such the competition should only be open to ***existing*** licensed operators, who are in a position to fully optimise the new non-paired allocations efficiently. This limitation should be reflected in the pricing schedule as the allocation will require pairing with existing license allocations.

If the new 10 GHz band is to be awarded as an extension of the FWALA framework, the same award process should apply. It is Digiweb's view that a first-come first-served basis should be preferred rather than a beauty contest format. ComReg should support the development of new services on this band without imposing the same restriction in terms of roll-out deadlines and minimum spec services. This is due to the possible complexities in pairing with existing allocations in terms of releasing uplink channel spectrum and making the technical adjustments required to operate in these pairings.

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

COMREG Consultation Channel Digiweb preferred Options:

Digiweb understand the increased demand for high speed, high quality internet and VPN services, and the need to deliver higher speeds to meet customer demand for bandwidth. To this end Digiweb recommend that larger blocks of spectrum are made available to existing operators who have the technology to utilise the spectrum. This will ensure that we meet today's market demand, but also to meet the growing demand over the coming years. In these changing economic times we also recognise the need to manage the cost of additional bandwidths. Digiweb are in a position to utilise existing technology with some further investment, and in so doing to drive costs down while increasing value for money to customers.

Digiweb welcomes Option 1: One spectrum lot of 154MHz as the superior choice, however portions of this should be paired with **unused spectrum at 10.350-10.400 MHz and 10.420-10.450 MHz**. Using DOCSIS technology it is possible to pair the remaining un-paired allocations with existing CPE Transmit uplink spectrum from existing awarded channels. It would be necessary to re-work the existing network and to re-distribute customers from existing Base Stations. It would also require a reduction in the uplink channel sizes deployed today in awarded existing spectrum channels to free capacity for pairing. However this is quite practical and the end result will deliver further improved services to Irish consumers and industry. It must be noted that as this unpaired spectrum is *considered as Downlink only* this limitation should be reflected in the license pricing schedule. It should also be noted that operators with exist spectrum are best placed to utilise this new spectrum.

In terms of options Digiweb propose the following in order of preference:-

Comreg should consider pairing of channels in the spectrum with available unused spectrum at 10.350 – 10.400 MHz, and 10.420 - 10.450 MHz indicated below

(Spectrum 10.321-10.350 MHz wouldn't be suitable as there would be non-existing lower band with 350 MHz duplex separation).

Existing 4 MHz band between Channel A and Radiolocation/SRDs band will be reproduced between A'' - SRDs and A' – Radiolocation/ SRDs. Keeping in consideration the required 350 MHz Duplex spacing and the defined guard band, we should be able to free up 22 MHz duplex (Channel A') at 10,074-10,096 MHz and 10.424-10.446 MHz, as well as 46 MHz duplex (Channel A'') at 10.000-10.046 MHz and 10.350-10.396 MHz.

In addition to the proposed Channel F, this would allow an increase of almost 40% of spectrum availability in the most congested areas (+82 MHz duplex, instead of only +14 MHz Duplex)

The remaining unpaired areas within the 154 MHz band can then be filled in with Downlink only channels:- 26 MHz between 10.046 - 10.072 Mhz, 58 MHz between 10.096 – 10.154 MHz (Guard band to be defined depending of technology used).

See Next Page a detail diagram of Digiweb's Proposition.

Digiweb Proposition:

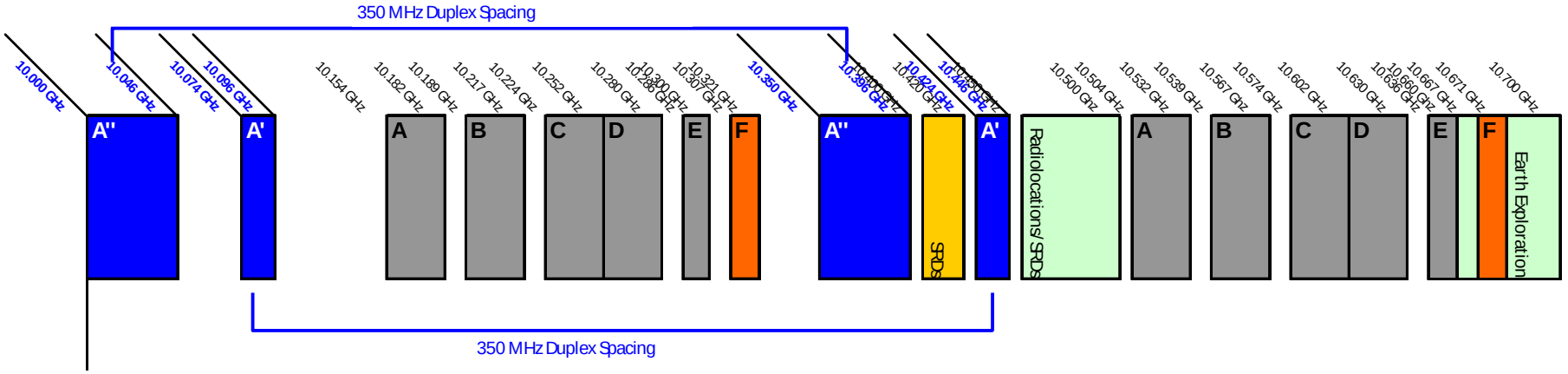


Figure 1

Option A

As above channels A" and A' paired together. The balance of the spectrum to be awarded to a single operator and paired as appropriate with existing licensed channels (CPE Transmit from A,B,C,D,E, or F). If ComReg do not agree to pair the proposed A" and A' with unused spectrum, then it is Digiweb's view that the full 154 MHz should be allocated to a single operator who has existing licensed bandwidth. Please refer to Figure 2 below.

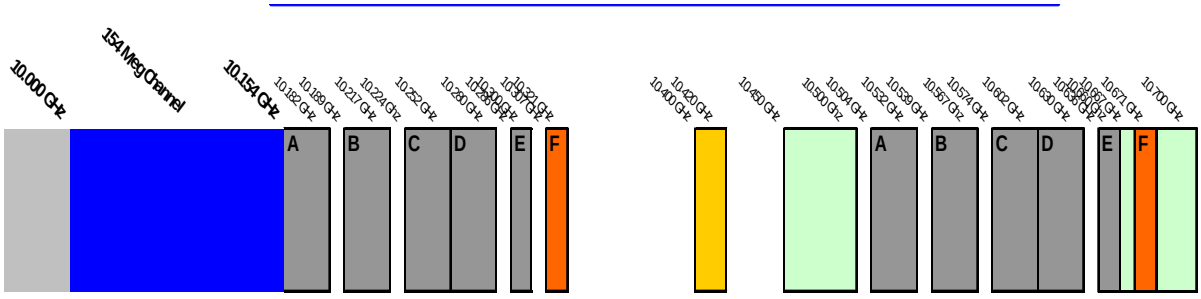


Figure 2

Option B:

2 X 72 MHz blocks with 4 MHz and 6MHz Guard Bands

Spectrum awarded as downlink only at this time on the basis that there is not adequate spectrum for duplex operation within the band. The re-engineering of existing awarded channel up-streams to free frequencies for UL pairing will be necessary.

This will ensure that the bandwidth is used efficiently with no un-usable gaps in the frequency plan. As discussed above Digiweb understand the increased demand for high speed, high quality internet and VPN services, and need to drive higher speeds to further improve Ireland's position in the global market. To this end Digiweb recommend that larger blocks of spectrum are made available to existing operators who have the technology to utilise the spectrum to not only meet today's market

demand, but allows them to guarantee to meet the growing demand over the coming years. Please refer to Figure 3 below.

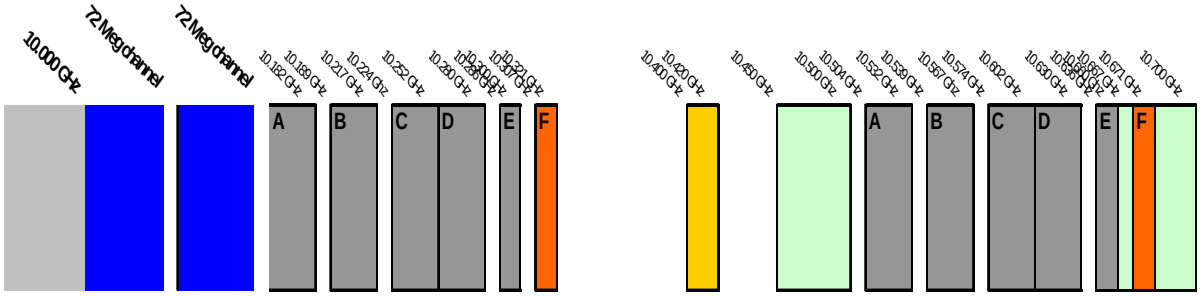


Figure 3

Option C:

2 X 56 MHz and 1 x 28MHz blocks with 2x4 MHz and 1x6MHz Guard Bands
Spectrum awarded as downlink only at this time on the basis that there is not adequate spectrum for duplex operation within the band. The re-engineering of existing awarded channel up-streams to free frequencies for UL pairing will be necessary.

This will ensure that the bandwidth is used efficiently with no un-usable gaps in the frequency plan. As discussed above Digiweb understand the increased demand for high speed, high quality internet and VPN services, and need to drive higher speeds to further improve Ireland's position in the global market. To this end Digiweb recommend that larger blocks of spectrum are made available to existing operators who have the technology to utilise the spectrum to not only meet today's market demand, but allows them to guarantee to meet the growing demand over the coming years. Please refer to Figure 4 below.

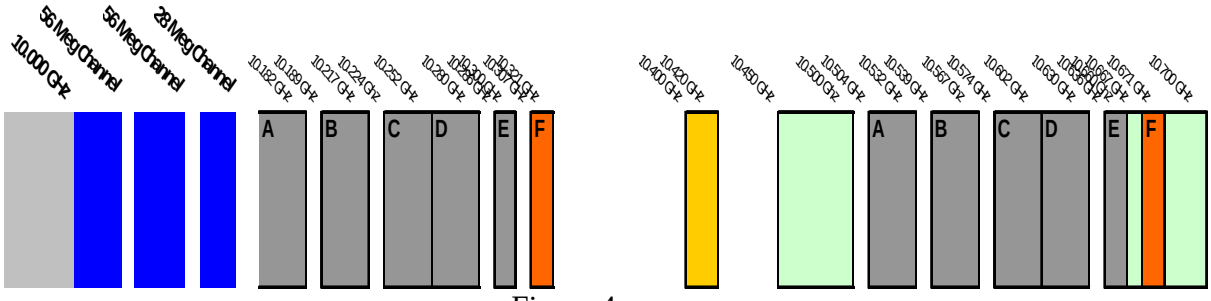


Figure 4

Option D:

5 X 24 MHz blocks with 4 MHz Guard Bands

Spectrum awarded as downlink only at this time on the basis that there is not adequate spectrum for duplex operation within the band. The re-engineering of existing awarded channel up-streams to free frequencies for UL pairing will be necessary.

This will ensure that the bandwidth is used efficiently with no un-usable gaps in the frequency plan. As discussed above Digiweb understand the increased demand for high speed, high quality internet and VPN services, and need to drive higher speeds to further improve Ireland's position in the global market. To this end Digiweb recommend that larger blocks of spectrum are made available to existing operators who have the technology to utilise the spectrum to not only meet today's market demand, but allows them to guarantee to meet the growing demand over the coming years. Please refer to Figure 5 below.

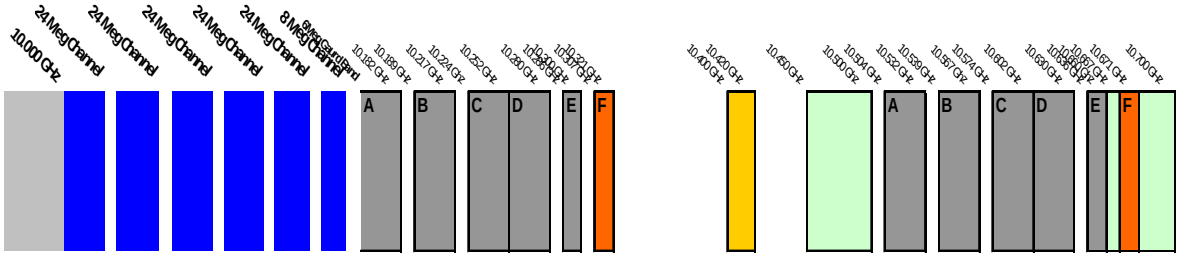


Figure 5

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

It is clear from the deployment of existing spectrum that the greatest demand is in urban dense areas. It is most probable that many operators will not have the technology in place to allow for use in this band, and/or cannot adapt the existing technology to allow pairing with existing sub-channel allocations. With low demand a low cost national license might be considered. In theory this could allow an existing operator with multiple band licenses to release some existing spectrum back to ComReg for re-deployment.

In this fashion consumers will be serviced by the availability of new additional spectrum, awarded at a low cost to the operator which in turn may be in a stronger position to offer better value to the consumer.

In the event that a national approach is not considered the geographical mix should be grouped into multiple urban areas where existing licenses are awarded, for example grouping single licenses to cover areas where the greatest demand for the existing awards has been. For the paired spectrum proposal indicated above as Channels A" and A', the existing FWALA geographical scaling might be considered. However, as the spectrum in question is not designated as European Common Allocation for FWALA the technology is non-standard from a global perspective. This technology therefore has a premium cost that should be considered when deciding on geographical scaling. The investment required in the technology to support this spectrum range should be balanced with a low cost license that offers the maximum opportunity for return to operators by capturing large urban areas within the license.

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

The spectrum should be released as a combination of unpaired and paired as per suggestions for pairing A" and A' above. For the unpaired spectrum the operator should be permitted to choose which other spectrum to pair it with for uplink operation. This un-paired spectrum can only be used as downlink due to the minimum duplex requirement. This may exclude new entrants and would imply that the spectrum is only suited to existing FWALA operators assigned 10.5GHz licenses. The spectrum should be awarded to existing operators who are in a position to rework existing spectrum usage, thereby releasing portions of the uplinks of existing licensed bands to pair with this spectrum.

The exercise of releasing uplink channels to pair with the new spectrum will involve interruptions to existing network deployments. It is not practical for the Regulator to define the pairings. For example in Digiweb's case it will be necessary to assess each deployment area for the least utilised uplink channels, reduce the channel bandwidth configured on existing network, and thus free the channel for pairing in that location with the new spectrum. Pre-defining the pairings will over complicate the process and will lead to un-necessary interruption to existing customer base. In addition this will lead to un-necessary costs to the operator awarded the new spectrum and might impact on the service charges to customers.

RESPONSE TO COMREG CONSULTATION DOCUMENT No 09/03

PROPOSED RELEASE OF SPECTRUM IN THE 10 GHz BAND

RESPONSE FROM PETER B GRANT
LICENCED IRISH RADIO EXPERIMENTER

27 / 2 / '09

Contents

2 **S**ummary of response, by Peter Grant.

This response to the Comreg Document 09/03, is my own personal view, on the subject,
and also the views of some of my fellow experimenters.
All responses can be read as my singular opinion.

The 10.0 GHz Section of the spectrum, (experimenter), in Ireland, is to say the least under used, the main reason for this is the high level of construction techniques, the available amount of surplus equipment, and affordable test equipment, released on to the surplus market.
Most equipment available is surplus systems from salvage military radar, and obsolete telecommunications equipment. There are some experimenters involved in cutting edge construction projects around the country. Some of these are in conjunction with Clubs and Groups of Licensed Amateurs, in Northern Ireland , and The UK

There are some Amazing ongoing projects involving construction, and telemetry of Amateur Satellite repeater equipment, under the banner of groups like *Am Sat UK*,
www.amsatuk.org; and Amateur Television in co-operation with BARTG www.bartg.org.uk *British Amateur Radio Teledata Group*. Both of which have membership and support from all around the world, including Ireland.

There are also small groups around the country, working inter County, and Cross Border Projects at lower level construction abilities, and goals.

The main reason for the scarcity of **E**xperimentation at this part of the spectrum, is the shortage of Surplus, and Salvage equipment, at an affordable price to experimenters.
As luck ? would have it, at this time, a source of 10 GHz surplus gear, has become available on the Continent, and a local groups is considering an expedition to purchase any worth while affordable items.

Licensed Experimenters in Ireland, are confined to the allocated "Band Plan" for working the various parts of the Radio Spectrum. The allocation for "Amateur", in the Band plan for Ireland in the region of 10 GHz, is,
Allocated " Amateur "from the point, 10.00GHz through 10.45 GHz, and "Amateur Satellite" from the point 10.45 GHz through 10.50 GHz. This allocation at the moment is on a secondary, non-interference basis.

Further comments later on the proposed new frequency designations.

NB. The frequencies allocated at present, are worked in harmony with the similar allocations of our European Neighbours, following the " *IARU Region 1 Band Plan"*

3 Proposals for the 10.5 GHz FWLA band

Conforming to the fact that ComReg, is the regulator for frequency allocations in Ireland, and the fact that it is considered a light touch, open and transparent body. I am surprised there has been no discussion on this severe demolition of the Experimenter Allocation in the 10GHz Band. It is understandable that market pressures must be maintained to make sure our country stays abreast of modern Commercial Communications Technology.

The rumours among engineers in the trade, of present day levels of "Broadband" saturation, are resulting in the de tuning of front end, domestic, LNB's on domestic Satellite Systems, is causing concern, on a wide scale, The suggestion that some of these are wide band, and so have little or no rejection of such full frontal bombardment.

It may be positive to allocate a maximum ERP at the transmitting antenna, but there is no "allocation", for sensitive electronic equipment, protection, in the near or far field of the radiated RF.

We can all only hope that major concern among citizens, to the multiplication of new antenna and Transmitter "Dishes", does not seriously hinder
the effective communications technology.

3

3.1 Propose the allocation suggested, including provision for Amateur secondary allocation. See proposed ban plan attached [5, 5.1]

3.2 As 3.1

3.3 Provision to be allowed for the co-existence of band allocation for Amateur

Service, and Amateur Satellite Service, with regard to the non interference of other services in the allocation
And with special regard to the allocations internationally for the Amateur Satellite Service

4 10.075 GHz be retained to satisfy the meteorological, and weather radar.
SRD's, and radio location can then be offered a sub band, 10.075-10.157.
If needed another sub band for SRD's can be introduced at 10.50 – 10.60 GHz
Which can work on a non interference, shared, basis with other allocated services, [5.1]

end page 4

4.1. Regarding the Allocation of FWALA frequencies, The spectrum designation be as follows :Lower band edge to start, 10.147 with 276 MHz of bandwidth, divided as best seen necessary by the licensees majority opinion. Finishing, 10.443, housing the lower spectrum of a 350 MHz duplex split with the upper bandwidth split, starting, 10.507 GHz through, 10.793 GHz, an equivalent block of higher spectrum of 276MHz to 10.793 GHz, giving the matching allocation of 350 MHz.
As the duplex section of corresponding spectrum.

Q1 * Licensing, award process. No Comment.
Q2 * No comment.
Q3 * See 4.1 Above. (page 4

4.2 As above, 4.1

4.2.1 As Above

4.2.2 As Above
Q3. As 4. and 4.1 Above

Q 4 No Comment

4.4 Q 5 I would favour , spectrum allocations as duplex pairs. To allow any band edge advantage.

End page 5

.1 Final Comments. a) 5.1b) Proposed frequency allocation chart.

a) The radio spectrum is a finite resource, in the matter of dependency of such a large percentage of communication being loaded thereon, I would be wary of Ireland having all its eggs in one basket.
Ie. The large percentage of microwave dependant systems, confined to a tight block of spectrum. Higher frequency blocks are under utilised, and have power level advantages.
1 The under utilisation of The National fibre Network.
2 The under development of the copper land line network.
3 The dependence of a remote electrical supply from the National Grid.
4 The exposure of systems to damage, natural and deliberate.

5 . 1 b) See Page 7 Chart, proposed spectrum allocation.

RESPONSE TO COM REG CONSULTATION DOCUMENT 09 / 03 PETER GRANT EI4HX

10.0GHz 0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.9	11 GHz
			350 MHz Duplex					
				srd	srd			
9.975 - 10.075 Mateorological SRD's weather radar Radiolocation	10.075 - 10.157 SRD's Radio location Space Research Radar	10.175 - 10.443 276 MHz FWALA low band section	0.4 0.5 Amateur world Amateur Satellite	10.507 - 10.793 276 MHz FWALA High Band section		10.8 - 10.9 SRD		10.9 - 11.2 GHz Astronomy Radiolocation
		350 MHz duplex						

9.975 GHz

11.20 GHz

PROPOSED BAND PLAN NATIONAL ALLOCATION WITH

REGIONAL VARIAT FOR CORK AND DUBLIN

10 GHz = 11 GHz

3 SR Telecom

Response by SR Telecom & Co

to

Commission for Communications Regulation Consultation (ComReg)

Reference: Submission re ComReg 09/03

27th February 2009

SR Telecom is pleased to provide responses to the Commission for Communication's Regulation consultation document on the, "Release of Additional Spectrum in the 10 GHz band", ComReg 09/03.

SR Telecom & Co. is a leader in innovative broadband wireless access (BWA) solutions for voice, Internet and enterprise services. Our team has over 25 years of experience in designing, developing and deploying wireless access networks for top-tier organisations around the world. SR Telecom & Co. focuses on delivering premium broadband technology and business-driven services that exceed operators' expectations and drive their business forward. SR Telecom is the only BWA vendor with a decade of experience deploying advanced WiMAX technologies in end-to-end solutions. Operators rely on us for rock-solid network stability. With networks of 200,000 subscribers built on our technology, real-world experience drives our product innovation. Our solutions and support strategies are key enablers for large-scale WiMAX rollouts.'

SR Telecom's is grateful to ComReg for allowing submissions to their consultation document.

Our responses to the questions in the consultation are as follows;

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

SR Telecom views the 10 GHz frequency band to be suited for enterprise applications to support:

- Access
    - Voice, data, and Internet
- Private Network
    - Voice, data, and Internet
- Security
    - Video surveillance, voice, and data
- Backhaul

- Wifi hotspots and WiMAX Access

SR Telecom's symmetryMX 10.5 GHz is a wireless system designed to provide Ethernet services for enterprises. The choice of Ethernet is based on its ubiquitousness and the ease to which it can introduce new applications. The system is based on our WiMAX Forum certified, carrier-class SYMMETRY platform. It enables state-of-the-art networks to leverage cost-effective WiMAX technology in the widely-available 10.5 GHz band. Additionally where sufficient spectrum is available to build large-scale networks, the product delivers enterprise-class services to optimise operators' business cases and expand their addressable markets.

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

SR Telecom suggests that the spectrum is allocated to FWALA services and applications; since ComReg have stated that the existing FWALA frequency band is congested in a number of areas. However the new allocation is unpaired and because the allocation for the sub-band 10.000 – 10.154 GHz is adjacent to the downlink allocation of 10154 - 10321 GHz, SR Telecom agrees with ComReg that to minimize the interference between operators, placing the spectrum under the FWALA licencing regime is an efficient and appropriate mechanism to allow co-existence between operators.

This is in preference to a licence exempt or light licensing scheme where the operator would be unable to offer a quality of service suited to enterprise applications, due to the potential interference from other operators. This is especially true in congested areas where the demand for spectrum is high; having a license exempt scheme may limit the applications that can be offered by operators. ComReg may also want to consider setting a criteria for modulation efficiency to minimise congestion, for instance the equipment should support greater than 3 bit/Hz

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

SR Telecom prefers options where the 154 MHz is divided into a number of channels with the minimum channel size being 3.5 MHz, similar to the FWALA channel sizes. This granularity would allow for a more flexible licensing scheme in areas of high demand. Although the current allocation is paired and is configured to support FDD, the proposed sub-band 10.000 – 10.154 can either be TDD or FDD with a reduced transmit to receive duplex spacing.

If the spectrum allocation were TDD, then;

a) a guard channel would be required at the upper edge of the new proposed sub band (10.154 GHz) or the highest frequency channel of the new proposed sub band could allocated to downlink only to ensure that the lower channel of the existing allocation is not affected by the new sub band allocation.

b) TDD may also require synchronisation between different operators and hence may detract from ComReg preference to be technology neutral, since the synchronisation would require both the timing and the framing of the downlink and uplink to be the same. As an alternate to synchronisation,

    a. A technology neutral contention based protocol could be mandated to mitigate potential interference between different systems and operators.

    b. A guard band is allocated between operators sufficient to enable the operator to choose the technology they wish to implement.

    c. A block edge mask is implemented between the operator allocations to reduce the restriction on what technology the operator wishes to use.

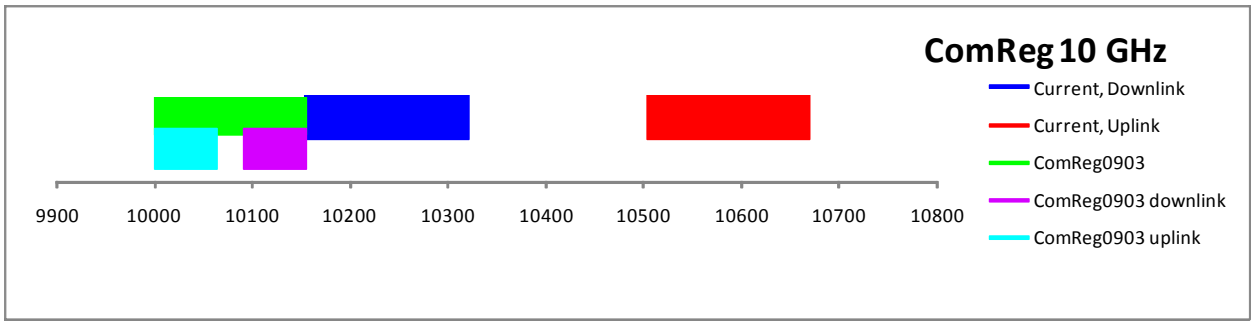
If the spectrum allocation were FDD;

Then the upper channels can be allocated to the downlink and the lower channels allocated to the uplink to avoid interference with the existing users. Having a total sub-band allocation of 154 MHz, for FDD an alternative transmit to receive spacing is needed. For the existing FWALA allocation; the transmit to receive duplex spacing of 350 MHz is reflected in ITU-R F.746 and ITU-R F.1568. As a possible alternative; a transmit to receive duplex spacing of 91 MHz is recommended by ITU-R F.747 normally for the band 10.55 – 10.68 GHz.

Based on this for the sub band 10.000 – 10.154, there could be the following block arrangements in the table below;

	Lower Limit (MHz)	Upper Limit (MHz)	Bandwidth (MHz)	Mode
ComReg0903 Downlink	10091	10154	63	FDD
ComReg0903 Uplink	10000	10063	63	FDD
ComReg0903 Duplex Space	10063	10091	28	TDD

As shown graphically below the downlink allocations for the existing and new allocations are adjacent to each;



This would preserve the technology neutrality and support the 3.5 MHz channel raster used by the existing FWALA allocations.

The duplex spacing of 28 MHz could be further allocated with sufficient guard bands as a single TDD allocation.

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

SR Telecom considers the optimum mix of geographical scaling to be best proposed by the potential operators of this block. However based on the 154 MHz allocation, we consider this to be sufficient spectrum to allow national, regional and local awards to be made.

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

As described in our answer to question 3 we suggest a combination of FDD and TDD to minimise the interference with the existing FWALA users and support technology neutrality. Therefore the majority of the new proposed sub band uses FDD and in the duplex space, TDD could be allocated with sufficient guard bands to allow co-existence. The general co-existence of spectrum users means the regulatory environment needs to support a blend of operators who can utilize the spectrum to meet their market objectives.

4 UPC

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Confidential

February 24, 2009

Ms Sinead Devey
Commission for Communications Regulation
Irish Life Centre
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Ireland

Ref: Reference: Submission re ComReg 09/03

Dear Ms Devey

With respect to ComReg consultation document 0/03 in relation to Release of Additional Spectrum in the 10 GHz Band, UPC's sole comment relates to the invitation to express interest in the 154Mhz of spectrum in the lower 10Ghz band for services other than for FWALA.

UPC would like to indicate our interest in gaining access to some FWALA spectrum for use outside Dublin and Cork in order to be able to offer broadband services to these specific regions.

As we are not involved in any other distribution technologies (mobile voice or data) we don't have a view on the technologies for the 154Mz being released.

We remain at ComReg's disposal should you require further clarification on the expression of interest referenced above.

Yours sincerely

K O'Sullivan

Kate O'Sullivan
Director Regulation & Public Policy