



Consultation Paper

Release of Additional Spectrum in the 10 GHz Band

Including possible use of the band 10.0 GHz to 10.154 GHz for fixed, mobile or radiolocation services

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All responses to this consultation should be clearly marked:-
“Reference: Submission re ComReg 09/03” as indicated above,
and sent by post, facsimile, e-mail or on-line at www.comreg.ie
(current consultations), to arrive on or before 5 pm on 27
February 2009, to:

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Please note ComReg will publish all respondents submissions
with the Response to this Consultation, subject to the provisions
of ComReg’s guidelines on the treatment of confidential
information – ComReg 05/24

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1 Foreword

In its current Spectrum Management Strategy Statement¹, the Commission for Communications Regulation ('ComReg') sets out its intention to release more spectrum in the 10 GHz band, in order to facilitate additional Wireless Broadband services.

The Fixed Wireless Access Local Area ('FWALA') scheme, which underpins the wireless provision of broadband access, was initiated in 2003 and to date accounts for 203 FWALA licences over the 3 available bands of 3.5, 10.5 and 26 GHz. The FWALA scheme services 117,802 broadband subscriptions², which makes up 10.47% of the total broadband market.

The 10.5 GHz FWALA spectrum is a sub-band of the overall 10 GHz band of spectrum, and is located in the upper part of the band between 10.154 – 10.300 GHz paired with 10.504 – 10.650 GHz. The success of the scheme has led to demand for FWALA spectrum outstripping supply in some cases, especially in densely populated areas. ComReg proposes to make available additional spectrum in the 10.5 GHz FWALA band for Wireless Broadband services under the FWALA scheme, thereby furthering consumer choice and service.

ComReg also proposes to release 154 MHz of spectrum in the lower part of the 10 GHz band. While the optimum use of this spectrum would appear to be for Wireless Broadband services, ComReg is open to suggestions from interested parties as to possible alternative uses for the spectrum. Interested parties are invited to respond to this consultation, setting out their opinions on ComReg proposals on the use of this spectrum.

John Doherty
Chairperson

¹ ComReg document 08/50 – Spectrum Management Strategy Statement 2008 -2010 – published 1 July 2008.

² Figures retrieved from ComReg quarterly report Q3 2008, ComReg document 08/101 published 15 December 2008

2 Executive Summary

ComReg has a statutory function to ensure the efficient management of Ireland's radio spectrum. In so doing, ComReg seeks to promote competition in the communications markets.

ComReg now proposes to release further spectrum, which would allow FWALA operators greater resources in meeting customer demand for FWALA services.

Under the current FWALA licensing regime³, in the frequency ranges 10.294 – 10.322 GHz and 10.644 – 10.672 GHz ComReg is proposing:

- to release an additional 2 x 14 MHz FWALA channel in Dublin and Cork.
- to release an additional 2 x 28 MHz FWALA channel in all areas other than Dublin and Cork.

This will provide more spectrum to operators to facilitate FWALA licensees in meeting the demand from consumers for access to broadband wireless services, particularly in highly populated areas where the need for additional FWALA spectrum is at its greatest.

Furthermore, ComReg is seeking views on the release of 154 MHz of spectrum in the 10.00 – 10.154 GHz part of the 10GHz band. There is no corresponding duplex pairing of spectrum with this sub-band. ComReg is now seeking expressions of interest in the licensing of this band and the technical parameters that might be applied.

³ Guidelines relating to FWALA can be viewed in document 06/17R3 at the following address, <http://www.comreg.ie/fileupload/publications/ComReg0617R3.pdf>

Regulations are set out for the FWALA scheme, S.I. No. 79 of 2003. This document describes the legislation on which the FWALA scheme is based upon.

3 Proposals for the 10.5 GHz FWALA band

This section details the current usage of the 10.5 GHz FWALA band and the provision of additional spectrum under the current FWALA licence regime.

3.1 The 10.5 GHz FWALA bandplan in Dublin and Cork

Figure 1 below illustrates the current and proposed frequency channelling arrangements in the 10.5 GHz FWALA band in Dublin and Cork. There are currently five licensed FWALA channels in the 10.5 GHz band - four 2 x 28 MHz FDD channels (Channels A, B, C and D) and one 2 x 14 MHz FDD channel (Channel E).

As Channels C and D are licensed to the same operator in both Dublin and Cork, ComReg decided, in the interest of spectrum efficiency, to remove the guard band between Channels C and D. This enabled ComReg to align the lower band edge of Channel D with the upper band edge of Channel C, which resulted in the release of an additional 2 x 14 MHz channel, Channel E, in the highly congested areas of Dublin and Cork, and which has already been assigned in those areas. This is illustrated in the bandplan shown in Figure 1 below.

ComReg is now proposing to make a sixth channel, Channel F, available in Dublin and Cork. This new Channel F, of 2 x 14 MHz (10.307 – 10.321 GHz paired with 10.657 – 10.671 GHz) would be made available for licensing under the current FWALA scheme, subject to the sharing criteria detailed in Section 3.3 below.

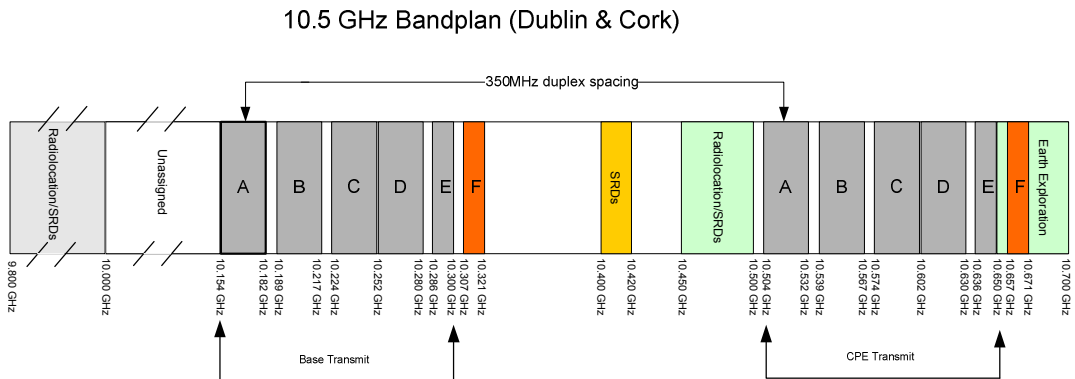


Figure 1: Current and proposed 10.5 GHz Bandplan in Dublin and Cork areas only.

3.2 The 10.5 GHz FWALA bandplan in the Rest of Ireland

Figure 2 illustrates the current and proposed spectrum usage in the 10.5 GHz band in the areas outside Dublin and Cork. There are four 2 x 28 MHz FWALA FDD channels - Channels A, B, C and D - with a transmit/receive separation of 350 MHz within the FWALA allocations of 10.150 – 10.287 GHz paired with 10.500 – 10.637 GHz.

ComReg is now proposing to make a further channel, Channel G, available in the rest of Ireland. This new channel, comprising 2 x 28 MHz (10.294 – 10.322 GHz paired with 10.644 – 10.672 GHz) would be made available under the current FWALA scheme in the areas outside of Dublin and Cork subject to the sharing criteria detailed in section 3.3 below.

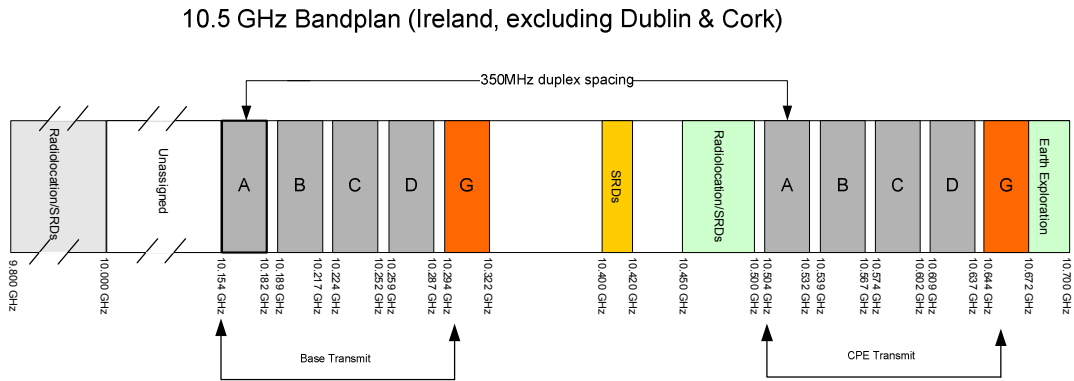


Figure 2: Current and Proposed 10.5 GHz FWALA Bandplan throughout Ireland, excluding Dublin and Cork areas

3.3 Mandatory Sharing Criteria

The band 10.6 – 10.68 GHz is currently allocated to the Earth Exploration-Satellite Service (passive) on a co-primary basis with, among others, fixed, mobile and radio astronomy services, at both an International and European level. The main function of these services within this spectrum is for the measurement of rain, snow, sea state, ocean wind and soil moisture, through the deployment of passive sensors.

The World Radiocommunication Conference of 2007 (WRC 07) passed a Resolution⁴ urging administrations to comply with the sharing criteria defined in the Resolution, in order to protect the Earth Exploration-

⁴ ITU-R Resolution 751 (WRC-07) - Use of the frequency band 10.6-10.68 GHz

Satellite Service (EESS)⁵ (passive) from interference in the 10.6 – 10.68 GHz band, noting that EESS (passive) sensors provide worldwide measurements that benefit all countries, even if these sensors are not operated by their country.

These sharing criteria, detailed in Table 1, allow for the fixed service, of which FWALA forms a part, to operate without undue constraints, while also providing EESS with protection against harmful interference. ComReg proposes to make these sharing criteria mandatory on all FWALA operators in the 10.6 to 10.68 GHz band and will be updating its FWALA Guidelines to reflect this.

Stations of point-to-multipoint systems in the fixed service

Parameter	Value
Hub stations (See Note 4)	
Maximum transmitter power at the antenna port	-7 dBW
Maximum off-axis e.i.r.p. above 20° from the horizontal plane	-6 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	-11 dBW
Maximum off-axis e.i.r.p. at 90° from the horizontal plane	-13 dBW
Customer stations (See Note 4)	
Maximum elevation angle	20°
Maximum transmitter power at the antenna port	-8 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	-18 dBW (See Note 5)

NOTE 4 – Administrations planning point-to-multipoint deployment in the band 10.6-10.68 GHz, paired with another frequency band, are encouraged to only deploy return links (i.e. emissions from customer stations) in the 10.6-10.68 GHz band.

NOTE 5 – In the case of point-to-multipoint systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of -3 dBW.

Table 1: Sharing Criteria applicable to the 10.6 – 10.68 GHz band, extracted from ITU-R Resolution 751 (WRC-07)

⁵ Earth exploration-satellite Services (EESS) (passive) and space research service (passive) are assigned frequencies 10.600 – 10.700 GHz on a primary basis. The main function of these services within this spectrum is for the measurement of rain, snow, sea state, ocean wind and soil moisture; through the deployment of passive sensors

4 Release of Spectrum between 10.000 – 10.154 GHz

The sub-band 10.000 – 10.154 GHz is part of the 10 GHz frequency band. In Europe and internationally, this sub band is allocated to the fixed, mobile and radiolocation services on a co-primary basis, and to the amateur service on a secondary basis. The International Radio Regulations also allocate, through footnote 5.479, the band 9975-10075 MHz to the meteorological-satellite service on a secondary basis for use by weather radars.

The term "Short Range Device" (SRD) is intended to cover the radio transmitters which provide either uni-directional or bi-directional communication and which have low capability of causing interference to other radio equipment. SRD's are assigned spectrum within the 10 GHz band of spectrum, located between 9.800 – 10.000 GHz, 10.400 – 10.420 GHz and 10.450 – 10.600 GHz. SRD's operate on a non-interference and non-protected basis in Ireland. SRDs that operate in accordance with the requirements laid down in ComReg document 02/71R1⁶, "Permitted Short Range Devices in Ireland" may be operated without the need for an individual user licence in Ireland.

Figure 3 and Figure 4 set out the allocations and designations within the 10GHz band.

⁶ ComReg Document 02/71R1, Permitted Short Range Devices in Ireland, http://www.comreg.ie/_fileupload/publications/odtr0271R1.pdf

Spectrum Allocation

Radiolocation	Radiolocation	Fixed				Radiolocation	Radiolocation	Fixed	Earth Exploration Satellite (passive)	
		Radiolocation				Fixed			Radio Astronomy	
Earth Exploration-Satellite (active)	Fixed	Amateur				Mobile	Fixed	Mobile except aeronautical mobile	Space Research (passive)	
Space Research (active)		Mobile			Mobile *	Amateur			Mobile except aeronautical mobile	
						Amateur Satellite			Fixed Radiolocation	
9.800 GHz	9.900 GHz	10.000 GHz	10.300 GHz	10.450 GHz	10.500 GHz	10.550 GHz	10.600 GHz	10.680 GHz	10.700 GHz	

Figure 3: Spectrum Allocation in the 10GHz band

Spectrum Designation

Short Range Devices	Short Range Devices	FWALA			Amateur Satellite (secondary)	FWALA	FWALA	FWALA	Radio Astronomy
		Amateur (secondary)			Amateur (secondary)			Short Range Devices	
		Short Range Devices			Short Range Devices	Short Range Devices	SAP/SAB	SAP/SAB	Earth Exploration Satellite (passive)
		SAP/SAB			SAP/SAB	SAP/SAB	SAP/SAB	SAP/SAB	Space Research (passive)
9.800 GHz	9.900 GHz	10.000 GHz	10.300 GHz	10.450 GHz	10.500 GHz	10.550 GHz	10.600 GHz	10.680 GHz	10.700 GHz

Figure 4: Spectrum Designation in the 10GHz band

In Ireland the spectrum 10.000 – 10.450 GHz is designated⁷ for use by FWALA, amateur services on a secondary basis, short range devices, and services ancillary to broadcasting.

The sub-band 10.000 – 10.154 GHz is currently not used in Ireland by either the fixed, mobile or radiolocation service applications and ComReg is of the view that this 154 MHz of spectrum could be a valuable resource for the provision of fixed, mobile or radiolocation services.

To help inform the decision making process ComReg is seeking the views of interested parties on potential uses for the sub-band.

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.

4.1 Possible licensing options

ComReg must decide how to assign spectrum that is available in the 10.000 – 10.154 GHz part of the band. Placing this spectrum under the FWALA licensing regime might be the most efficient and appropriate mechanism for assigning this spectrum, given that a licence regime is already in place.

Alternatively, if there is demand for this spectrum for any service or application other than FWALA then it would be necessary to make new regulations, pursuant to the Wireless Telegraphy Act 1926, and to decide an appropriate form of licensing process to assign frequencies. As ComReg favours a technology neutral approach to the licensing of spectrum, any technical parameters would need to be flexible enough to cater for a range of different technologies.

ComReg is seeking the views of parties with an interest in this sub-band, particularly with respect to the potential licensing regime which may be used, and the method which could be used to decide who would be successful assigned spectrum in this sub-band.

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.

⁷ Radio Frequency Plan for Ireland, ComReg document 07/81, can be viewed at this address, http://www.comreg.ie/_fileupload/publications/ComReg0781.pdf

4.2 Band Plan Options

There is no harmonised European band plan for the 10GHz band. For illustrative purposes and further discussion, ComReg has set out below two possible options for deployment of this band.

4.2.1 Option 1: One spectrum lot of 154 MHz

Make the entire 154 MHz block (shown as unassigned in Figure 3) available as a single block.

4.2.2 Option 2: Divide the spectrum into different lot sizes

Divide the 154 MHz block into a number of channels as shown in Figures 5, 6 and 7 below. The channel sizes could be 7 MHz, 14 MHz, 28 MHz or 56 MHz (similar to the FWALA channel sizes) or combinations thereof; with or without guard bands.

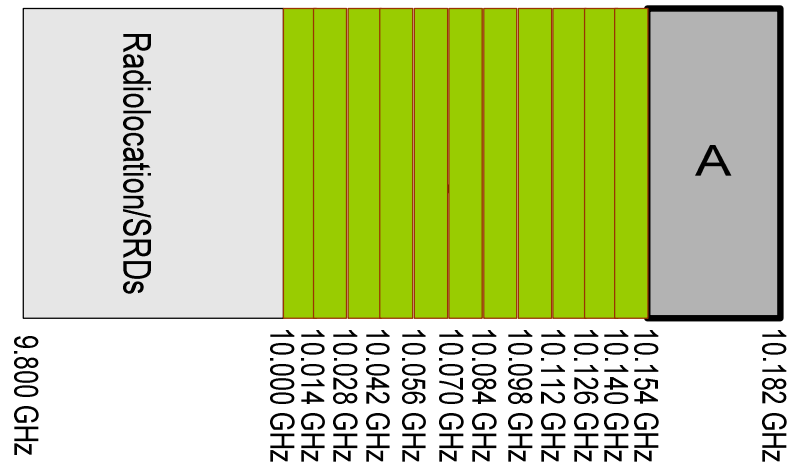


Figure 5: Suggested band plan with 14 MHz channels



Figure 6: Suggested band plan with 28 MHz channels, and one 14 MHz channel/guard band at 10.140 – 10.154 GHz

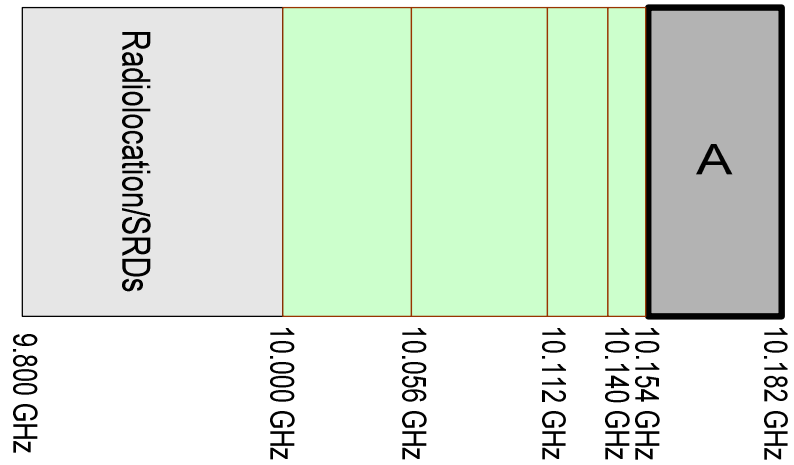


Figure 7: Suggested band plan with 56 MHz channels (10.000 – 10.056 GHz & 10.056 – 10.112 GHz), one 28 MHz channel (10.112 – 10.140 GHz) and one 14 MHz channel/guard band (10.140 – 10.154 GHz)

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.

4.3 Geographical Scaling

ComReg must consider how the most effective use of spectrum might be encouraged and how consumers can be best served by geographically scaling any award. Awards could be made on a national, regional or local area basis and if a number of channels are available then different scales could apply to different channels.

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.

4.4 FDD or TDD usage

There is no harmonised bandplan within Europe for this spectrum. ComReg is seeking the views of interested parties on whether the spectrum should be released as paired or unpaired spectrum (pairing currently licensed FWALA spectrum (10.15 – 10.3 GHz and/or 10.5 – 10.65GHz) with the 10.000 – 10.154 GHz allocation), or be flexible enough for both technologies to be licensed.

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.

5 Submitting Comments

The consultation period commences on 28 January 2009 and closes at 5.00pm on 27 February 2009. ComReg welcomes all comments or inputs on the proposals in this document, as well as any options not considered so far by ComReg.

ComReg also welcomes expressions of interest in using the spectrum detailed in this document.

It would simplify the task of analysing responses if comments are referenced to the relevant section numbers from this document, where possible.

Having analysed and considered the comments received, ComReg will publish a report on the consultation which will summarise the responses to the consultation.

To promote openness and transparency, ComReg will publish all respondents' submissions to this consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

Responders to this consultation should familiarise themselves with ComReg's Consultation Procedures, which are set out in ComReg document 03/31⁸.

Please note

ComReg appreciates that issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful. As it is ComReg's policy to make all responses available on its web-site and for inspection generally, respondents to consultations are requested to clearly identify confidential material and place confidential material in a separate annex to their response

Such Information will be treated subject to the provisions of ComReg's guidelines on the treatment of confidential information – ComReg 05/24

⁸ ComReg document 03/31 can be viewed at this address
http://www.comreg.ie/_fileupload/publications/Comreg0331.pdf