



Commission for
Communications Regulation

Fixed Links Survey

General Document

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An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation

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Additional Information

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All responses to this Survey should be clearly marked:-

“Reference: Submission re ComReg 12/10” as indicated above and sent by e-mail to arrive on or before 5 pm on 28 March 2012, to:

Email: Licensing@comreg.ie

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 Introduction

1. As part of ComReg's Strategy for Managing the Radio Spectrum: 2011 – 2013¹, ComReg noted its intention to conduct a survey to gauge the experiences of licensees with a view to informing a future revision of the engineering guidelines. ComReg now invites you to complete the following survey. In particular, ComReg invites you to comment on the following proposed areas of reform raised in ComReg's Response to Consultation Document 11/88²-
 - the current 23 GHz & 26 GHz Fixed Links bands high/low interference search radii
 - making 56 MHz or higher bandwidth channels available in current and new fixed links bands
 - opening of further fixed links bands in the next strategy review period covering 2014-2016
 - the possibility of making part of three new bands scheduled for release in the period 2011-2013 available for Point-to-Multipoint use

NOTE: Operators are requested to provide technical data and documents in support of the views expressed in their responses to this survey.

¹ ComReg Document 11/89 – Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1189.pdf

² ComReg Document 11/88 – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1188.pdf

1.1 High/low interference search radii

2. Table 1 shows the high/low search radius parameters currently employed by ComReg. These parameters are in line with those of other European regulators³
4.

Frequency Band (GHz)	Hi/Lo search radius (meters)
6	500
7	500
8	500
11	500
13	500
15	400
18	300
23	200
26	200
28	100
31/32	100
38	100
40	100

Table 1: High/low search radius

3. ComReg received a number of responses⁵ to ComReg's consultation document 11/28⁶, which relate to changing the high/low interference radius for the 23 GHz & 26 GHz bands. Respondents asked ComReg to reduce the radius from 200 meters to 100 meters. Respondents submitted that this relaxation would remove a “significant limitation” for their fixed link planning, particularly in dense urban areas. It was suggested by respondents that ComReg could also employ different search radii for rural and urban areas.
4. ComReg currently employs far-field approximation to calculate the high/low interference radius, as shown in equation 1.

³ https://www.eofcom.admin.ch/eofcom/public/help.do?screen=txbandplace.search#customer_name

⁴ <http://licensing.ofcom.org.uk/binaries/spectrum/fixed-terrestrial-links/guidance-for-licensees/tfac/ofw446.pdf#page=60>

⁵ ComReg Document 11/28s – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1128s.pdf

⁶ ComReg Document 11/28 – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1128.pdf

Equation 1:

$$R > \frac{2D^2}{\lambda} \text{ or, since } \lambda = \frac{v}{f}$$

$$\Rightarrow R > 6.7 \cdot D^2 \cdot f$$

Where; D = diameter of antenna (meters), λ = wavelength, v = velocity ($3 * 10^8$ m/s), & f = frequency (GHz)

5. If ComReg's understanding of the "significant limitation" raised but not explained in detail by some respondents to Document 11/28 is correct, then a possible solution for reducing the search radii in the 23 GHz and 26 GHz bands would be to limit the antenna size to 0.6 meters on links in urban areas. This action would allow for a reduction of the search radius to 100 meters. Antenna with a diameter greater than 0.6 meters would only be licensed in rural areas and would be subject to a search radius of 200 meters.
6. ComReg will consider revising the 23 & 26 GHz High/low interference radii and that of other bands **if sufficient technical proof** can be provided that interference will not increase or can be mitigated between licensees.

Q. 1 Please state your views regarding the current and proposed search parameters for the 23 GHz and 26 GHz bands as well as for existing and new frequency bands, providing technical proof in support of your views as appropriate.

Q. 2 Is the High/low interference radius the only issue that needs resolution before ComReg can consider releasing further national block licences in the 26 GHz band at some future date?

1.2 Higher bandwidths for existing bands

7. Table 2 shows a list of frequency bands, which are currently available for licensing, and indicates the higher bandwidths, which could potentially be permitted. The frequency bands shown have been open for quite some time and are congested in certain parts of the country, particularly within the ranges E310000 to E320000 and N220000 to N240000.

Frequency Band (GHz)	Raster (MHz)	CEPT/ERC/REC	Minimum Transmission Capacity
13	56	12-02 E	2 x STM-1
15	56	12-07 E	2 x STM-1
18	110	12-03 E	4 x STM-1
23	112, 56	T/R 13-02 Annex 1	4 x STM-1, 2 x STM-1
38	112, 56	T/R 12-01 E	4 x STM-1, 2 x STM-1

Table 2: Potential new bandwidths for frequency bands, which are currently open

8. ComReg received a number of responses to ComReg's consultation document 11/28 which relate to introducing higher bandwidth channels to existing and future fixed link bands. The respondents indicated that the use of 56 MHz bandwidth should be allowed on very high capacity trunk systems as this would ensure spectrum efficiency. It was further noted that dual polarisation systems utilizing 56 MHz channels would reduce licensing and equipment overheads while still allowing capacity requirements to be met.
9. Higher bandwidths, if permitted, will have minimum transmission data rates applied to prevent spectrum hoarding. Congestion within existing lower bandwidths may prevent any such higher bandwidth channels from being licensed. Once interference analysis has been conducted on a new 56 MHz link, ComReg may consider merging any two adjacent 28 MHz channels to create one 56 MHz channel.
10. A breakdown of the number of links licensed in the different bands can be found in Annex 1.

Q. 3 What are your views regarding the potential for permitting higher bandwidths in current fixed links bands as shown in Table 2?

1.3 Future fixed links bands

11. ComReg is committed to opening three new frequency bands in line with ComReg's Strategy for Managing the Radio Spectrum: 2011 – 2013⁷. The three new frequency bands are comprised of the 28 GHz (27.5 – 29.5 GHz), 31/32 GHz (31.0 - 33.4 GHz) and 40 GHz (40.5 – 43.5 GHz) bands. These three bands all have potential for immediate utilisation as equipment is ready available and indeed these bands have been opened in other EU member states.

12. No views were expressed to ComReg in respect of other bands.

Frequency Band (GHz)	Raster (MHz)	CEPT/ERC/REC	Minimum Transmission Capacity
28 (27.5 - 29.5)	112, 56, 28, 14, 7, 3.5	T/R 13 02 Annex C	4 x STM-1 (112 MHz), 2 x STM-1 (56 MHz)
31 (31.0 - 31.3)	28, 14, 7, 3.5	ECC/REC (02)02	4 Mbit/s
32 (31.8 - 33.4)	112, 56, 28, 14, 7, 3.5	ECC/REC (01)02 E	4 x STM-1 (112 MHz), 2 x STM-1 (56 MHz)
40 (40.5 - 43.5)	112, 56, 28, 14, 7	ECC/REC (01)04	4 x STM-1 (112 MHz), 2 x STM-1 (56 MHz)
49 (48.5 - 50.2)	28, 14, 7, 3.5	ECC/REC 12 01 E	4 Mbit/s
52 (51.4 - 52.6)	56, 28, 14, 7, 3.5	ECC/REC 12 11 E	2 x STM-1 (56 MHz)
56 (55.78 - 57)	56, 28, 14, 7, 3.5	ECC/REC 12 12 E	2 x STM-1 (56 MHz)
58 (57 - 59)	100, 50	ECC/REC (09)01	4 x STM-1 (100 MHz), 2 x STM-1 (50 MHz)
65 (64 - 66)	50, 30	ECC/REC (05)02	2 x STM-1 (50 MHz)

Table 3: New and unopened frequency bands for point-to-point fixed links

Q. 4 Would you welcome the opening of these three frequency bands? Are there any additional bands that ComReg should also consider? Support your answer.

⁷ ComReg Document 11/89 – Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1189.pdf

1.4 Point-to-Multipoint bands

13. Table 4 shows a list of frequency bands which are available for Point-to-Multipoint links. ComReg received no responses⁸ to ComReg's consultation document 11/28⁹ regarding opening new bands for Point-to-Multipoint use. However, several enquires have been received outside of the consultation process regarding the use of Point-to-Multipoint systems. Currently Point-to-Multipoint links are not licensed in any of the existing bands.

14. As three of the possible frequencies have ECC recommendations for Point-to-Multipoint use, ComReg seeks your views on opening part of these bands for Point-to-Multipoint use.

Frequency Band (GHz)	CEPT/ERC/REC
28 (27.5 - 29.5)	T/R 13 02 Annex C
32 (31.0 - 33.4)	ECC/REC (11)01
40 (40.5 - 43.5)	ECC/REC (01)04

Table 4: Frequency bands that allow Point-to-Multipoint systems

Q. 5 Please state your views regarding opening part of the new frequency bands for Point-to-Multipoint use.

⁸ ComReg Document 11/88 – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1188.pdf#page=36

⁹ ComReg Document 11/28 – Review of the Period 2008 – 2010 & Proposed Strategy for Managing the Radio Spectrum: 2011 – 2013. http://www.comreg.ie/_fileupload/publications/ComReg1128.pdf

1.5 Technical conditions for fixed links

15. ComReg is also carrying out a review of its guidelines to applicants for Point-to-Point radio link licences document¹⁰. ComReg asks operators to review the frequency bands & mandatory technical conditions¹¹ in Annex 1 of the Point-to-Point guidelines document and to comment on any aspects which they feel need to be revised
16. Operators are requested, to provide technical data and documents in support of their views relating to changes to the technical conditions for fixed link licences.

Q. 6 Please state your views regarding the current technical conditions for fixed links.

¹⁰ ComReg Document 09/89 – Guidelines to Applicants for Radio Links Licences.
http://www.comreg.ie/_fileupload/publications/ComReg_0989.pdf

¹¹ ComReg Document 09/89 – Guidelines to Applicants for Radio Links Licences.
http://www.comreg.ie/_fileupload/publications/ComReg_0989.pdf#page=26

Annex: 1 Fixed links overview

A 1.1 Number of fixed links per band in Ireland

Band (GHz)	Links	250 MHz	56 MHz	55 MHz	40 MHz	29.65 MHz	28 MHz	27.5 MHz	20 MHz	14 MHz	7 MHz	3.5 MHz	% per band
L6	122					122 (8)							1.1
U6	236				232 (8)				4 (16)				2.2
L7	1									1			0
7	277						243 (5)			18 (10)	16 (20)		2.5
L8	315					315 (8)							2.9
U8	16									4 (6)	4 (12)	8 (24)	0.1
11	724				722 (12)				2				6.6
13	1220						833 (8)			197 (16)	185 (32)	5 (64)	11.2
15	1845						482 (15)			588 (30)	524 (60)	251 (120)	16.9
18	739			142 (17)				597 (35)					6.8
23	1998		32 (9)				675 (20)			490 (41)	591 (83)	210 (168)	18.3
26	725						183 (6)			369 (12)	172 (24)	1 (48)	6.6
38	2685						889 (40)			860 (80)	698 (160)	238 (320)	24.6
80	7	7											0.06
Total	10910	7	32	142	954	437	3305	597	6	2527	2190	713	
% of total		0.06	0.3	1.3	8.7	4	30.2	5.5	0.05	23.2	20.1	6.5	

Number of available channels in brackets (*)

Table 5: Breakdown of fixed links licensed in Ireland

A 1.2 Breakdown of links licensed within the Dublin Area

Number of fixed links in Dublin County (E30000 to E330000, N220000 to N260000) - 2519 links (23% of total)

Number of links operating within the congestion area (E310000 to E320000 and N220000 to N240000) - 1686 links (15% of total)

Number of links operating within the congestion area (E310000 to E320000 and N220000 to N240000) per band - 13 GHz (50 links), 15 GHz (91 links), 18 GHz (176 links), 23 GHz (297 links), 26 GHz (159 links), 38 GHz (827 links), other bands (86 links)

Number of links operating from Three Rock (E317400 to E317800 and N223000 to N224500), Co. Dublin - 303 links

Number of links operating from Three Rock (E317400 to E317800 and N223000 to N224500), Co. Dublin per band - 13 GHz (41 links), 15 GHz (61 links), 18 GHz (50 links), 23 GHz (73 links), other bands (78 links)

Links with capacity >140 Mb/s (Countrywide) - 2948 (27%)

Dual polar links (Countrywide) - 610 (5.6%)