



Commission for
Communications Regulation

Domestic Frequency Co-ordination in the 3400 - 3800 MHz band

Licensed Operator Code of Practice

General Document

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Content

Section	Page
1 Introduction.....	3
1.1 Principles of the Code of Practice	3
2 Spectrum Band plan in the 3.5GHz band.....	5
3 Code of Practice – 3.5 GHz band	6
Annex 1: 3.5 GHz Block Edge Mask.....	7

1 Introduction

1. Fixed Wireless Access Local Area (FWALA) and Broadband Wireless Access Local Area (BWALA) are licensing schemes for the provision of wireless broadband access to end-users.
2. Licensees are free to deploy equipment under the terms of their FWALA and BWALA licences within a 'Service Area' specified in the licence and are also responsible for ensuring that any exported interference as a result of these deployments does not exceed a specific level calculated at a fixed distance from the centre of the local area.
3. As a general policy ComReg will issue licences for wireless systems on a technology neutral basis and this has been the approach under the FWALA and BWALA licensing schemes.

1.1 Principles of the Code of Practice

4. While every effort has been made by ComReg to minimise the possibility of interference between licensed operators in licensing FWALA and BWALA systems, it is possible that situations will arise from time to time where it is necessary to coordinate the usage of frequencies between different FWALA and BWALA networks in order to facilitate the operation of these networks.
5. This Code of Practice is based on the following principles:
 - It is not possible to provide an environment which is completely free of interference;
 - Operators have a number of mitigation options available to deal with interference problems;
 - Operators require a level of certainty in frequency planning for their network;
 - It is not possible to anticipate every possible interference scenario – therefore a pragmatic approach is required;
 - Operators with neighbouring networks may arrive at sharing solutions independent of ComReg;
 - That a Code of Practice be considered best practice in the absence of any other agreements;

- ComReg is responsible for the international coordination of radio systems between the Republic of Ireland and other countries;
- Management of the deployment of network infrastructure, including customer premises equipment, in the service area and within the licensed frequency channel is generally a matter for the operator;
- The local area approach and the requirement to comply with the maximum permissible field strength contour will result in differing EIRP values for base-stations and customer premises equipment deployed within the licensed service area;
- The approach in Ireland should as far as possible take into consideration the approach recommended by CEPT¹, the European Commission and other relevant bodies;
- That this Code of Practice is an operational document and may be subject to review and amendment from time to time to reflect such technological changes, new legal obligations, or other matters as may arise;

¹ European Conference of Postal and Telecommunications Administrations (www.cept.dk or www.ero.dk). Reference ERC/REC 14-03, ECC Report 033 and ECC/REC(04)05.

2 Spectrum Band plan in the 3.5GHz band

6. The spectrum available for licensing in the 3.5GHz band is shown in Figure 1. It is noted that guard bands between operators licensed on adjacent frequency channels must be accommodated within the licensed channel of each operator.

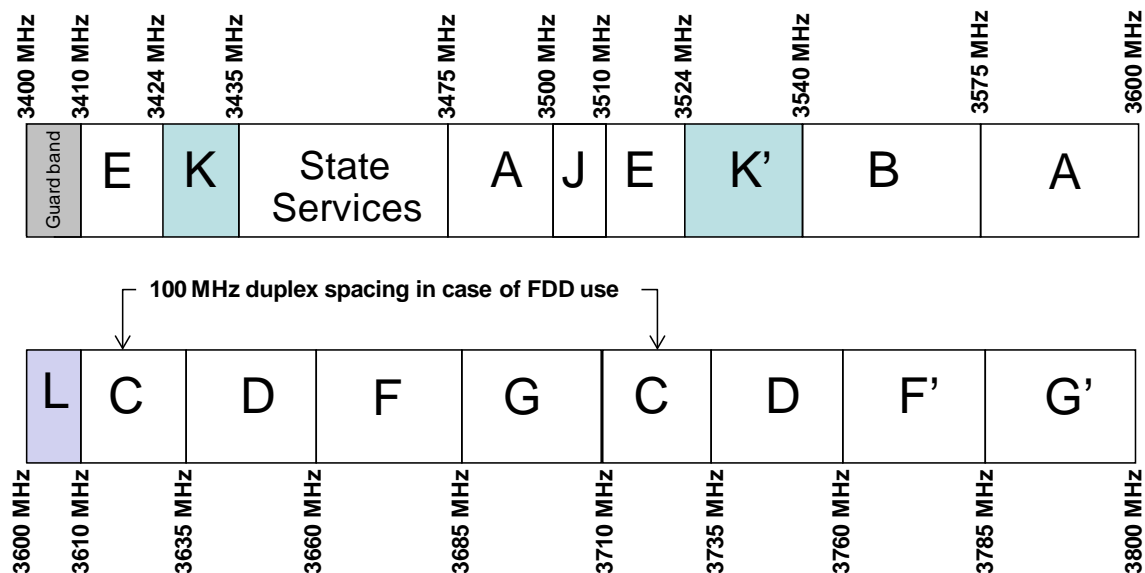


Figure 1: Channel arrangements in the 3.4 GHz – 3.8 GHz band

7. As noted previously, FWALA and BWALA licences are issued on a technology neutral basis and therefore it is certain that systems of differing technical characteristics and deployment will be licensed in adjacent frequency channels.

3 Code of Practice – 3.5 GHz band

8. It is generally recognised that the most spectrally efficient and liberal method to minimise the possibility of interference between operators as a result of emissions from one licensee into a frequency channel licensed to another licensee is to use a 'Block Edge Mask' common to all licensees. The Block Edge Mask given in Annex 1 defines the transmission mask in terms of power spectral density (dBW/MHz) at the upper and lower edge of each licensed frequency channel.
9. To this end, Licensees agree:
 1. to notify ComReg of any coordination agreement with other licensees;
 2. to resolve any interference dispute between them. Where resolution cannot be agreed ComReg shall mediate;
 3. to a maximum EIRP level from any transmitter of 14dBW/MHz. Please note that this power level is set as an absolute maximum and that licensees must ensure compliance with the 33dB μ V/m signal level limit in accordance with their licence when setting the transmitter power of any transmitter licensed under the FWALA and BWALA schemes;
 4. to comply with the block edge mask power limits defined in Annex 1;
 5. that site specific deployments may give rise to technical considerations that cannot be anticipated (e.g. intermodulation products and adjacent spectrum block emissions) which may necessitate specific site engineering solutions and that the licensees will take appropriate action to minimise these.

Annex: 1 - 3.5 GHz Block Edge Mask

A) Limits for In-Block Emissions

Station Type	Maximum e.i.r.p. spectral density (dBm/MHz) (including tolerances and automatic transmitter power control (ATPC) range)
Central station (and repeater stations downlink)	+ 53 ²
Terminal station outdoor (and repeater station uplinks)	+ 50
Terminal stations (indoor)	+ 42

Table 1 e.i.r.p. spectral density limits for fixed and nomadic deployments between 3400 – 3800 MHz

Station Type	Maximum e.i.r.p. spectral density (dBm/MHz) (Minimum ATPC range 15 dB)
Central station	+ 53 ³
Terminal station outdoor (+ 25

Table 2 e.i.r.p. spectral density limits for mobile deployments between 3400 – 3800 MHz

B) Limits for out-of-block emissions (Block Edge Mask for Central Stations)

² The central station e.i.r.p. spectral density value given in the table is considered suitable for conventional 90 degrees sectoral antennas

³ The central station e.i.r.p. spectral density value given in the table is considered suitable for conventional 90 degrees sectoral antennas

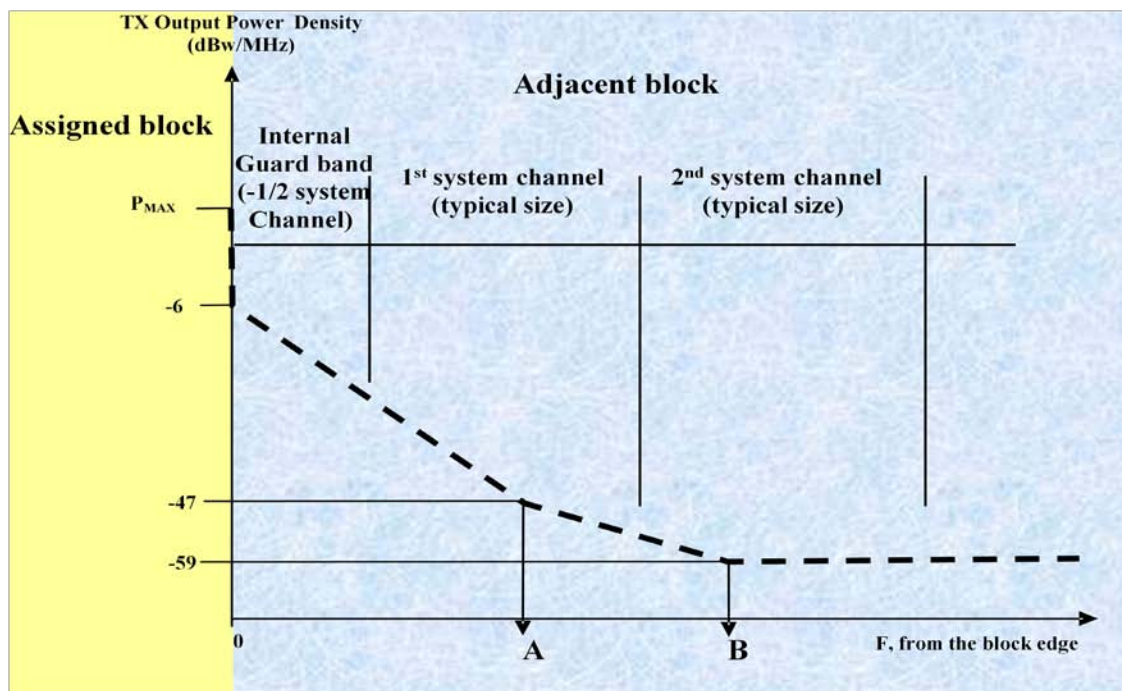


Figure 1: Central Station out-of-block emissions.

Frequency offset	Definition (% of the size of the assigned block)
A	20%
B	35%

NB: The percentages given in the “Definition” column refer to the smaller of adjacent blocks, if blocks are unequal size.

Table 3

Frequency offset	Central station transmitter output power density limits (dBm/MHz)
In-band (within assigned block)	See Tables 1 and 2
$\Delta F = 0$	-6
$0 < \Delta F < A$	$-6 - 41 \cdot (\Delta F/A)$
A	-47
$A < \Delta F < B$	$-47 - 12 \cdot ((\Delta F - A)/(B - A))$
$\Delta F \geq B$	-59

Table 4 Tabular description of central station block edge mask