

# **WAG(03)04v3**

**SOURCE; WAG REGULATORY & WAG SHARING**

**01/05/03**

**VERSION 3.0**

**DRAFT**  
**UK Interface Requirement 2007**  
**Fixed Broadband Services operating in the frequency**  
**range 5725 -5875 MHz**  
**(Version 1.00)**

98/34/EC Notification Number: N/A

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## 1. Foreword

- 1.1 The Radio Equipment and Telecommunications Terminal Equipment Directive 99/5/EC (R&TTE Directive) was implemented in the United Kingdom (UK) on the 8 April 2000 by The Radio Equipment and Telecommunications Terminal Equipment Regulations, Statutory Instrument 2000 No. 730. In accordance with Articles 4.1 and 7.2 of Directive 1999/5/EC, this UK Interface Requirement contains the requirements for the use of Fixed Broadband Radio Systems operating in the frequency range 5725-5875 MHz.
- 1.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 1999/5/EC.
- 1.3 It is required by the Wireless Telegraphy Act 1949 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by the Secretary of State. It is a condition of such a licence or exemption regulations as appropriate that the equipment must meet the minimum requirements specified in this UK Interface Requirement for the stated equipment types and for the stated frequency bands.
- 1.4 The requirements given in the main body of this UK Radio Interface Requirement will apply in the use of Fixed Broadband Radio Systems operating in the frequency range 5725-5875 MHz, in the UK. Fixed Broadband Radio Systems share this frequency range with military radars, satellite E-S links, ENG OB links and RTTT systems. Therefore mitigation techniques may need to be employed to avoid harmful interference to those services. Although there is currently no Harmonised European Norm for Fixed Broadband Radio Systems operating in this frequency range, standardisation activities continue within ETSI. If necessary the resultant standards will include appropriate mitigation techniques such as DFS and TPC. At the time of writing, the Europe wide regulatory framework remains under development but it is likely that any ERC Decision to formalise use of the band for Fixed Broadband Radio Systems will mandate implementation of the specific mitigation measures mentioned above. [Since the majority of equipment currently available on the market is not yet capable of implementing these measures and in order to allow the market to develop, guidance on the conditions under which such equipment is deemed to comply with the R&TTE Directive is given – needs to be checked].
- 1.5 This UK Radio Interface Requirement will be revised as necessary, for example to follow;
  - i) current technology developments for reasons related to the effective and appropriate use of the spectrum in particular maximising spectrum utilisation; and
  - ii) changes to the available spectrum allocated for short range, broadband, wireless communications.
  - iii) Publication of a Harmonised standard by ETSI.
- 1.6 All UK Radio Interface Requirements notified under Directive 98/34/EC will be published and will be made available free of charge from the RA Information and Library Service and/or the RA web-site. The addresses for both the Library and the web-site are given on the back cover of this document
- 1.7 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given on the back of this document.

## 2. **Minimum Equipment Requirements for Operation within the UK**

- 2.1 The minimum requirements in this document are made for reasons related to the effective and appropriate use of the radio spectrum, in particular maximising spectrum utilisation.
- 2.2 This UK Radio Interface Requirement gives a high level description of how the spectrum in the UK is used for Fixed Broadband Radio Systems operating in the frequency range 5725-5875 MHz. It does not prescribe a technical interpretation of the 'essential requirements' of Directive 1999/5/EC.
- 2.3 This UK Radio Interface Requirement therefore stipulates the minimum requirements necessary to allow Fixed Broadband Radio Systems operating in the frequency range 5725-5875 MHz to be licensed in the UK. Tables 2.1 and 2.2 contain the relevant equipment parameters. These together with the 'essential requirement' detailed in Article 3.2 of the Directive 1999/5/EC constitute the minimum equipment requirements for the operation of Fixed Broadband Radio Systems operating in the frequency range 5725-5875 MHz within the UK.
- 2.4 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility for Fixed Broadband Radio Systems and with other radiocommunication services while promoting enterprise, innovation and competition.
- 2.5 This UK Radio Interface Requirement provides the necessary technical information that facilitates access to spectrum allocated to Fixed Broadband Radio Systems in the UK. It is not the intention of this UK Radio Interface requirement to duplicate or impose any additional 'essential requirements' of the Directive 1999/5/EC on products. Any specified parameters within this document are for the purpose of identifying product options and not as a national product requirement.

**Table 2.1: Minimum Equipment Requirements**

Frequency range (MHz)	Service	Power	Duplex	Additional Technical Requirements	Notes
5725-5875 <sup>12</sup> (Band C)	Fixed	The maximum output EIRP spectral density Shall not exceed 100 mW/MHz eg: 2W EIRP in a 20MHz.channel <sup>3</sup>	TDD	<p><b>DFS.</b> Equipment operating in this band must implement a random channel access mechanism capable of operating across all of the frequency range. Shall prevent co-channel operation in the presence of Radar signals. The DFS detection threshold shall be based upon</p> <p>-67 dBm for devices with EIRP greater than 1W                      -64 dBm for devices from 200mW to 1W EIRP                      -62 dBm for devices with EIRP less than 200mW</p> <p>These thresholds represent the levels at the output of the antenna and are normalised to 0dBi antenna gain. For devices with a higher gain the threshold may be increased by 1 dB for each dB of antenna gain.</p> <p>The DFS system shall operate according to the document EN 301 893</p> <p><b>TPC</b> A TPC range of at least 19dB shall be used, relative to the maximum EIRP allowed for a FWA station. Stations with a maximum EIRP capability that is lower than the maximum EIRP allowed limit can reduce the TPC range accordingly.</p>	See Informative Annex channel plan details

<sup>1</sup>Licences shall be issued on a non-protection and non-interference (to other primary users) basis.

<sup>2</sup>Co-ordination & site clearance considerations may impose additional restrictions on the maximum radiated power allowed on specific frequencies, directions and locations.

<sup>3</sup>The e.i.r.p. spectral density of the transmitter should not exceed the following values for the elevation angle  $\theta$  above the local horizontal plane (of the Earth):

-34dB(W/4KHz)	for	$0^\circ \leq \theta < 4^\circ$
$-34 - 1.2(\theta - 4)$ dB(W/4KHz)	for	$4^\circ \leq \theta < 28^\circ$
-62.8 dB(W/4KHz)	for	$\theta > 28^\circ$

For systems deploying antennas with greater azimuth directivity, studies show that it may be possible to respect the spectrum sharing requirements with less constraining elevation spectral density values.

Eg: For Azimuth Beamwidths less than 25°:

-34 dB(W/4kHz)	for	$0^\circ \leq \theta < 90^\circ$ (Ref: WAG sharing (03)19)
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An alternative to the above is to specify an antenna boresight gain of [10dBi] minimum.

## Annex A Channel Plan (Informative)

**Table A1; Nominal carrier frequency allocations**

Carrier centre frequency $f_c$ (MHz)		
5 MHz channelisation	10 MHz channelisation	20 MHz channelisation
5727.5, 5732.5, 5737.5, 5742.5, 5747.5, 5752.5, 5757.5, 5762.5, 5767.5, 5772.5, 5777.5, 5782.5, 5787.5, 5792.5, 5797.5, 5802.5, 5807.5, 5812.5, 5817.5, 5822.5, 5827.5, 5832.5, 5837.5, 5842.5, 5847.5, 5852.5, 5857.5, 5862.5, 5867.5, 5872.5	5730, 5740, 5750, 5760, 5770, 5780, 5790, 5800, 5810, 5820, 5830, 5840, 5850, 5860, 5870	5735, 5755, 5775, 5795, 5815, 5835, 5855

**Figure A3; Spectral Power Mask**

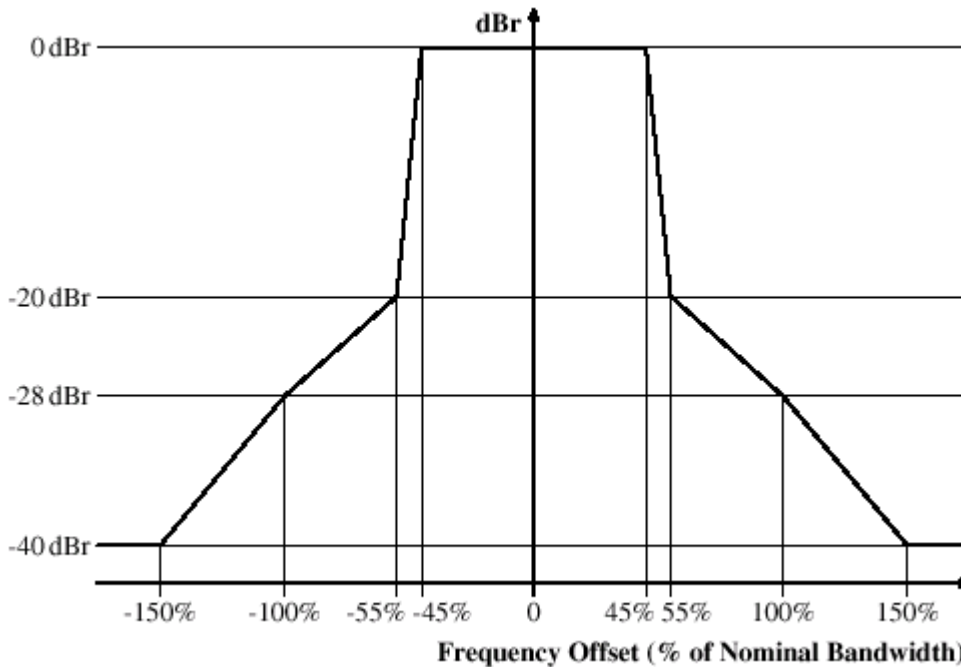


Figure A3: Transmit spectral power mask. dBm is the spectral density relative to the maximum spectral power density of the transmitted signal. This mask is taken from the essential requirements stated in draft EN 301 893. This mask should be scaled according to the channel size. It is suggested that the minimum channel size should be 5MHz and the maximum be 20MHz.

## **Annex B Additional Performance Parameters (Informative)**

- A.1 Standards EN 300 636 and EN 301 021 contain additional performance parameters and limits that the Radiocommunications Agency assume are met by TDMA / OFDM / OFDMA point-to-multipoint radio equipment when planning and managing the radio spectrum in the UK.
- A.2 Standards EN 301 373 and EN 301 080 contain additional performance parameters and limits that the Radiocommunications Agency assume are met by FDMA point-to-multipoint radio equipment when planning and managing the radio spectrum in the UK.
- A.3 Standards EN 301 055 and EN 301 124 contain additional performance parameters and limits that the Radiocommunications Agency assume are met by DS-CDMA point-to-multipoint radio equipment when planning and managing the radio spectrum in the UK.
- A.4 Standards EN 301 179 and EN 301 253 contain additional performance parameters and limits that the Radiocommunications Agency assume are met by FH-CDMA point-to-multipoint radio equipment when planning and managing the radio spectrum in the UK.
- A.5 Standard EN 301 744 contains additional performance parameters and limits that the Radiocommunications Agency assume are met by DS-CD/TDMA point-to-multipoint radio equipment when planning and managing the radio spectrum in the UK.
- A.6 Standards EN 301 525 and EN 302 085 contain additional performance parameters and limits that the Radiocommunications Agency assume are met by point-to-multipoint radio antennas when planning and managing the radio spectrum in the UK.

## Document history

Draft	Date	Changes

### Radiocommunications Agency

General Enquiries to the  
Information and Library Service:  
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This is a UK Radio Interface Requirement

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