
OfW48 UK Frequency Allocations for Fixed (Point-to-Point) Wireless Services and Scanning Telemetry

Contents

Section

1. Overview	1
2. Technical regulations	2
3. Notes specific to the frequency charts	3
4. Notes specific to frequency bands	4
5. Frequency allocations	5
6. Abbreviations	24
7. Document history	25
8. Contact details	27

1. Overview

This document shows the current bands managed by Ofcom that are available for fixed terrestrial (point to point) links and scanning telemetry in the UK.

2. Technical regulations

- The Radio Equipment Directive (Directive 2014/53/EU) was implemented in the United Kingdom (UK) by the Radio Equipment Regulations 2017. In accordance with Articles 8 and 7 of Directive 2014/53/EU, the IR2000: The UK Interface Requirement 2000 contains the requirements for the licensing and use of fixed (point-to-point) wireless services in the UK.
- IR2037: The UK Interface Requirement 2037 applies for scanning telemetry services.
- IR2078: The UK Interface Requirement 2078 applies for the 60 GHz band.

3. Notes specific to the frequency charts

The first column describes each available frequency band, represented by a diagram (not to scale). The frequency band limits are listed below the diagram; frequencies below 10 GHz are represented in MHz, while those above 10 GHz are in GHz. The width of each guard band is shown above the diagram and is always specified in MHz

The channel arrangements in some bands are staggered, so that the width and position of the guard band vary for different channel spacings. In these cases, a table underneath gives details of the guard bands for different spacings (with all frequencies in MHz).

The first column also includes the title of the relevant international recommendations for each band, produced by the European Conference of Postal and Telecommunications (CEPT) or the International Telecommunication Union (ITU). CEPT recommendations are available at <http://www.cept.org/ecc/> and ITU Recommendations at <http://www.itu.int>.

The final column contains the channel spacing for duplex operation in each frequency band except for bands above 60 GHz.

Details of standard systems assigned in the UK are shown in the relevant technical frequency assignment criteria.

4. Notes specific to frequency bands

450 MHz band

The Scanning Telemetry Band is used by fixed terrestrial point to multipoint radio-based System Control and Data Acquisition (SCADA) networks which control and monitor remote applications (i.e. telecontrol, telemetry, data distribution and gathering systems).

4 GHz

The frequency ranges 3.600 to 3.680 GHz paired with 3.925 to 4.009 GHz are block licensed and are not available from Ofcom for point to point links.

From 25 July 2017, channels within the frequency ranges of 3.695 GHz to 3.815 GHz paired with 4.015 GHz to 4.135 GHz, i.e. channels 4,..,7 on the 30 MHz channel raster and channels 7,.. 14 on the 15 MHz channel raster are not available for point to point assignments. For further details see the statement and consultation on improving consumer access to mobile services at 3.6GHz to 3.8GHz.

18 GHz

The Soft Boundary Frequency Assignment (SBFA) method is employed at 18 GHz. This approach to frequency assignment encourages the development of link communities on the basis of modulation order with the aim of reducing inequalities between link assignments.

For more information on the 'Soft Boundary Assignment Approach' refer to the Technical Frequency Assignment Criteria for this band, available from <http://www.ofcom.org.uk>.

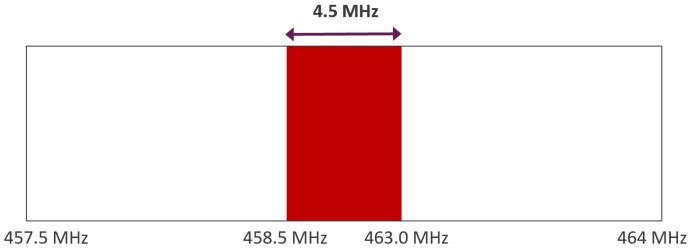
60 GHz

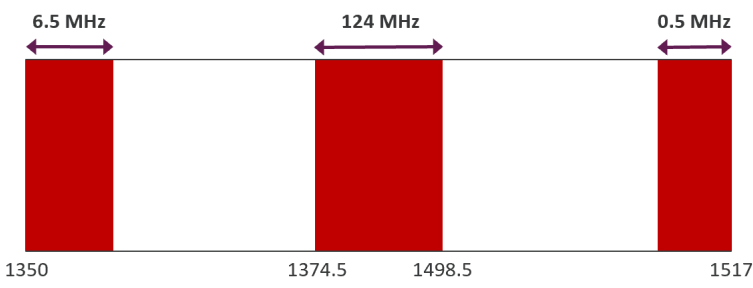
Fixed wireless systems conforming to IR2078 are exempt from licensing in this band.

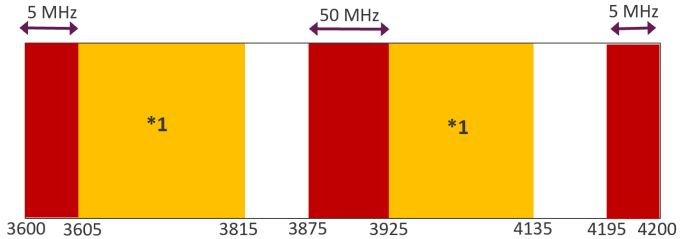
73.375 –75.875 GHz and 83.375-85.875 GHz

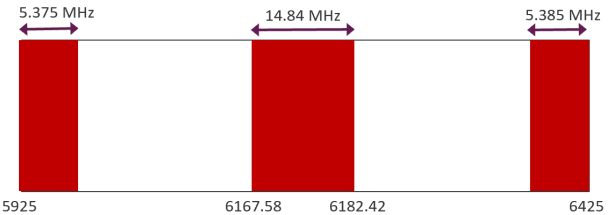
These are self-coordinated bands.

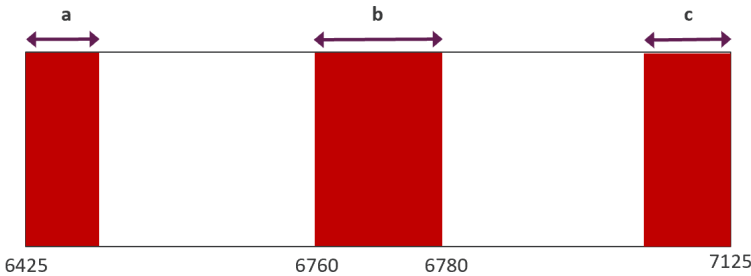
5. Frequency allocations

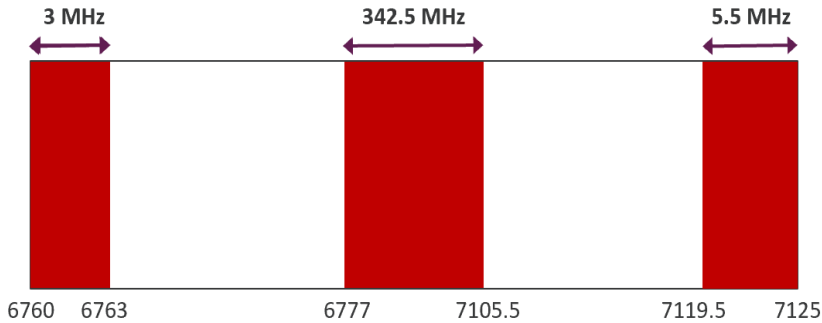
450 MHz	Data Transmission Range (kbit/s)	Cell Structure	Basic parameters
 <p style="text-align: center;">Channel Duplex Spacing: 5.5 MHz</p>	<p>1200 to 2400</p>	<p>6 channels per cell giving 2 channels per utility</p> <p>12 channels per cluster giving a co-channel re-use distance of 150 km</p> <p>A potential channel re-use of 23 times across the UK</p>	<p>System availability approaching 99.9%; and typical co-channel carrier to interference ratio of 26 dB.</p>

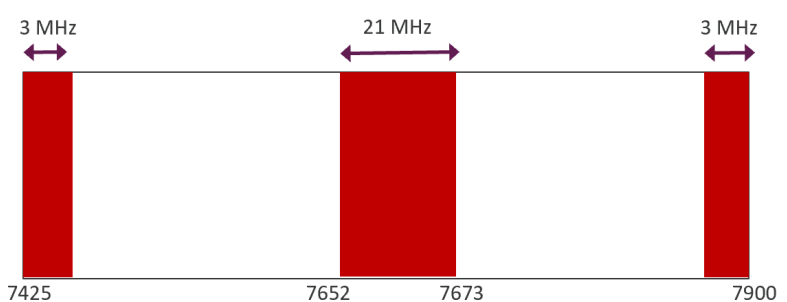
1.4 GHz	Radio Channels Available in the UK
<p>Please note that this band is no longer available for new fixed wireless links or technical variations.</p>  <p>CEPT Recommendation T/R 13-01 E Annex A Channel Duplex Spacing: 142 MHz</p>	<ul style="list-style-type: none"> 720 x 0.025 MHz 240 x 0.075 MHz 72 x 0.25 MHz 36 x 0.5 MHz 18 x 1 MHz 9 x 2 MHz 1 x 3.5 MHz

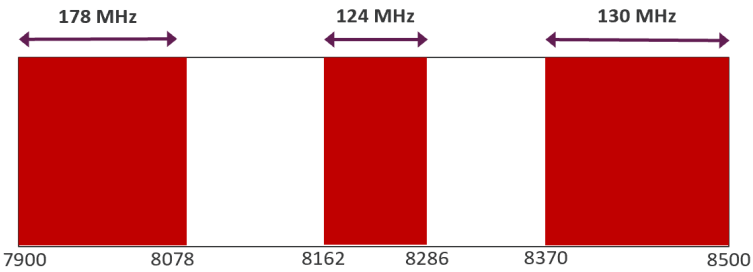
4 GHz	Radio Channels Available in the UK
 <p style="text-align: center;"> CEPT/ERC/REC 12-08 E Annex A Part 2 Channel Duplex Spacing: 320 MHz </p> <p><i>*1 not available from Ofcom for point to point fixed links</i></p>	<p>4 x 15 MHz</p> <p>2 x 30 MHz</p>

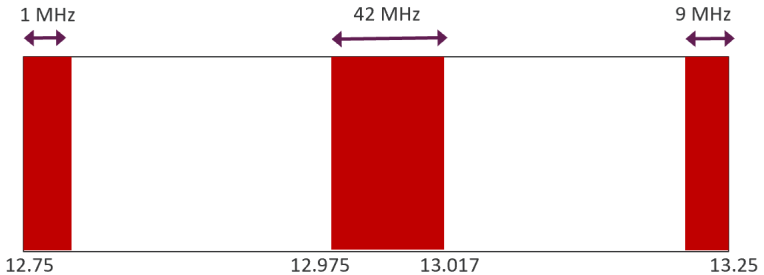
Lower 6 GHz	Radio Channels Available in the UK
 <p>CEPT/ERC/REC 14 – 01 E Annex 1 Channel Duplex Spacing: 252.04 MHz</p>	<p>8 x 29.65 MHz</p> <p>7 x 59.3 MHz</p>

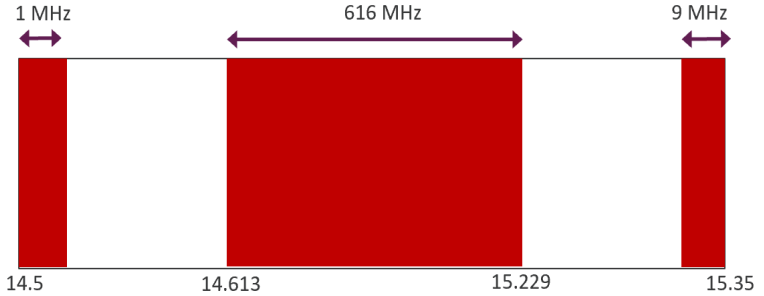
Upper 6 GHz	Radio Channels Available in the UK																		
 <p style="text-align: center;">CEPT/ERC/REC 14 – 02 E</p> <p style="text-align: center;">For 20 MHz and 40 MHz channel arrangements</p> <p style="text-align: center;">Channel Duplex Spacing: 340 MHz</p> <p>Channel Spacing:</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th></th> <th style="text-align: center;">20 MHz</th> <th style="text-align: center;">40 MHz</th> </tr> </thead> <tbody> <tr> <td>a:</td> <td style="text-align: center;">5</td> <td style="text-align: center;">15</td> </tr> <tr> <td>b:</td> <td style="text-align: center;">20</td> <td style="text-align: center;">20</td> </tr> <tr> <td>c:</td> <td style="text-align: center;">35</td> <td style="text-align: center;">25</td> </tr> </tbody> </table> <p style="text-align: center;">ITU-R F.384-10</p> <p style="text-align: center;">Channel Duplex Spacing: 340 MHz for 30 MHz channel arrangements</p> <p>Channel Spacing:</p> <table border="0" style="margin-left: 40px;"> <tbody> <tr> <td>a:</td> <td style="text-align: center;">20 MHz</td> </tr> <tr> <td>b:</td> <td style="text-align: center;">40 MHz</td> </tr> <tr> <td>c:</td> <td style="text-align: center;">40 MHz</td> </tr> </tbody> </table>		20 MHz	40 MHz	a:	5	15	b:	20	20	c:	35	25	a:	20 MHz	b:	40 MHz	c:	40 MHz	<ul style="list-style-type: none"> 16 x 20 MHz 10 x 30 MHz 8 x 40 MHz 9 x 60 MHz
	20 MHz	40 MHz																	
a:	5	15																	
b:	20	20																	
c:	35	25																	
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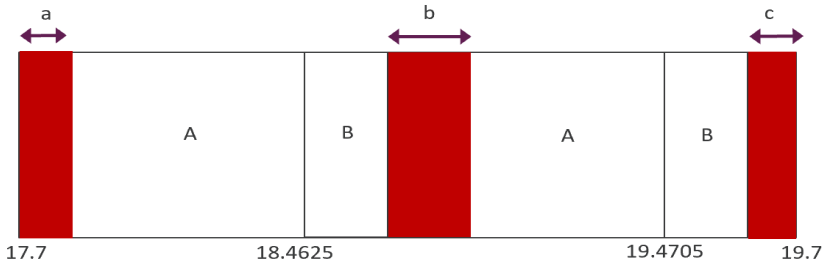
Upper 6 GHz	Radio Channels Available in the UK
<p>Low Capacity channels</p>  <p>CEPT/ERC/REC 14 – 06 E</p> <p>For 1.75 MHz and 3.5 MHz channel arrangements in 14 MHz plan</p> <p>Channel Duplex Spacing: 342.5 MHz</p>	<p>4 x 3.5 MHz</p> <p>8 x 1.75 MHz</p>

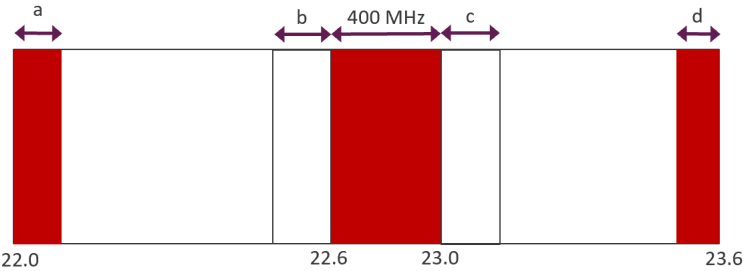
7.5 GHz	Radio Channels Available in the UK
 <p>ITU-R F.385-9 Annex 4 Channel Duplex Spacing: 245 MHz</p>	<ul style="list-style-type: none">32 x 7 MHz16 x 14 MHz8 x 28 MHz7 x 56 MHz

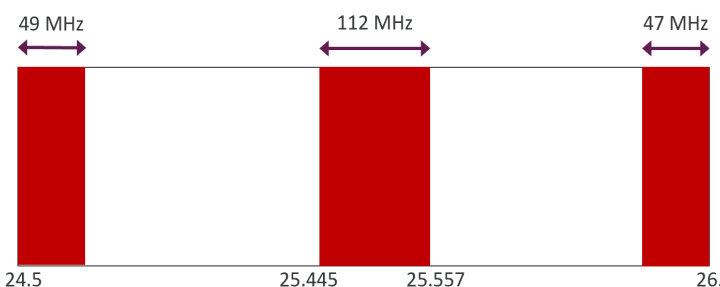
8 GHz	Radio Channels Available in the UK
 <p>ITU-R F.386-9 Annex 5</p> <p>Channel Duplex Spacing: 208 MHz</p>	<p>The 8GHz band is shared with MoD. The 8078 to 8162 MHz paired with 8286 to 8370 MHz is available for fixed link assignment.</p> <ul style="list-style-type: none">12 x 7 MHz6 x 14 MHz3 x 28 MHz

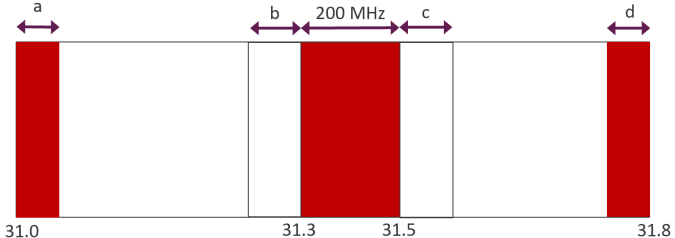
13 GHz	Radio Channels Available in the UK
 <p>CEPT/ERC/REC 12 – 02 E – Annex A Channel Duplex Spacing: 266 MHz</p>	<ul style="list-style-type: none"> <li>128 x 1.75 MHz <li>64 x 3.5 MHz <li>32 x 7 MHz <li>16 x 14 MHz <li>8 x 28 MHz <li>7 x 56 MHz

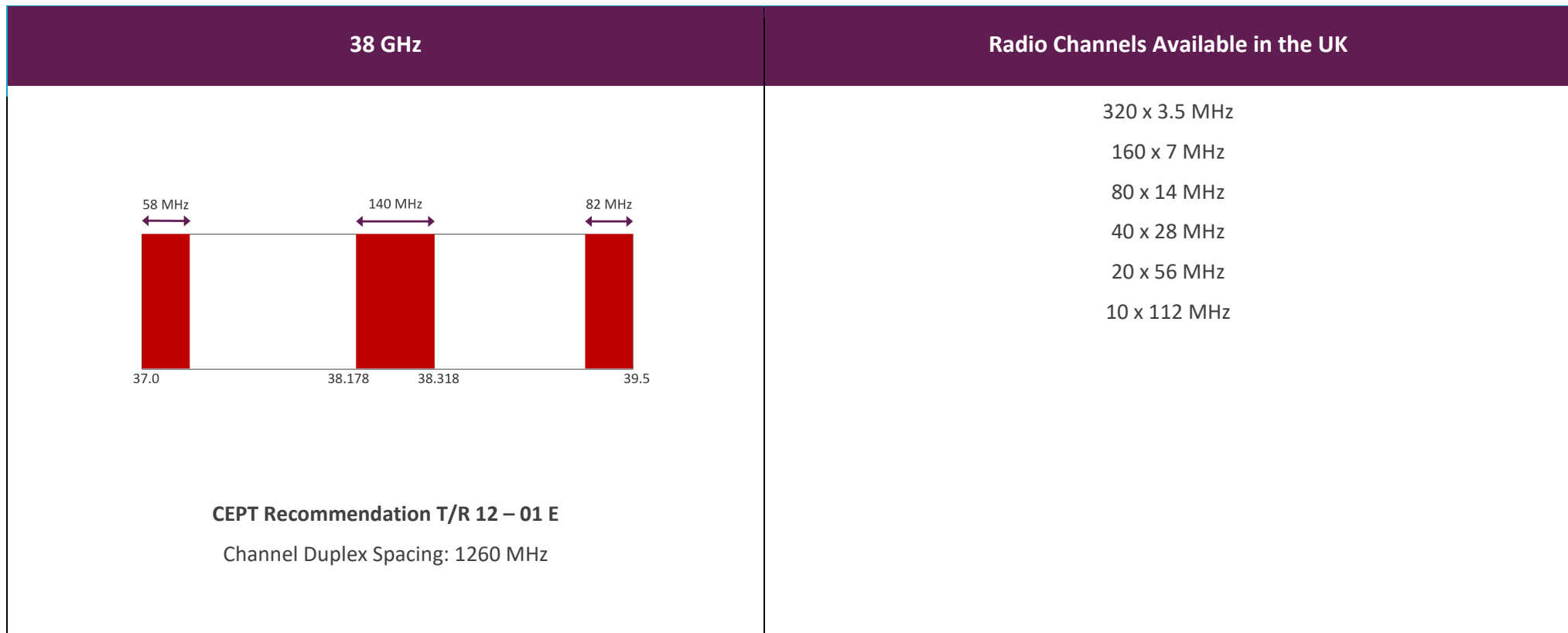
15 GHz	Radio Channels Available in the UK
 <p>The diagram shows a frequency spectrum from 14.5 GHz to 15.35 GHz. It features three red blocks: a 1 MHz block at 14.5 GHz, a 616 MHz block from 14.613 GHz to 15.229 GHz, and a 9 MHz block at 15.35 GHz. The 1 MHz and 9 MHz blocks are indicated by double-headed arrows above them. The 616 MHz block is indicated by a double-headed arrow above it. The frequency values 14.5, 14.613, 15.229, and 15.35 are labeled below the x-axis.</p> <p>CEPT/ERC/REC 12 – 07 E Channel Duplex Spacing : 728 MHz</p>	<ul style="list-style-type: none">64 x 1.75 MHz32 x 3.5 MHz16 x 7 MHz8 x 14 MHz4 x 28 MHz2 x 56 MHz

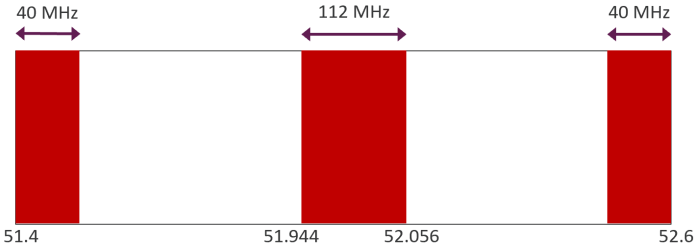
18 GHz	Radio Channels Available in the UK
 <p>Channel Spacing: 3.5 7 13.75 27.5 55</p> <p> a: - - 6.875 13.75 27.5</p> <p> b: - - - - -</p> <p> c: 19.5 26.5 - - -</p> <p>Note: The dimensions of Guard Bands are variable and dependent on the channel raster used. Dimensions are given here where channel rasters are adjacent to the lower or upper Guard Bands.</p> <p style="text-align: center;">Area A: CEPT/ERC/REC 12 – 03 E</p> <p style="text-align: center;">For 13.75MHz, 27.5MHz and 55MHz Channels</p> <p style="text-align: center;">Channel Duplex Spacing: 1010 MHz</p> <p style="text-align: center;">Area B: ITU_R Rec. F.595</p> <p style="text-align: center;">For 3.5MHz and 7MHz Channels</p> <p style="text-align: center;">Channel Duplex Spacing: 1008 MHz</p>	<p>61 x 3.5 MHz</p> <p>30 x 7 MHz</p> <p>54 x 13.75 MHz</p> <p>27 x 27.5 MHz</p> <p>13 x 55 MHz</p> <p>6 x 110 MHz</p>

23 GHz	Radio Channels Available in the UK																														
 <p>CEPT Recommendation T/R 13 – 02 E Annex A (modified)</p> <p>Channel Duplex Spacing: 1008 MHz</p> <table> <tr> <td>Channel Spacing:</td> <td>3.5</td> <td>7</td> <td>14</td> <td>28</td> <td>56</td> </tr> <tr> <td>a:</td> <td>2.75</td> <td>8</td> <td>8</td> <td>8</td> <td>8</td> </tr> <tr> <td>b:</td> <td>9.25</td> <td>11</td> <td>18</td> <td>32</td> <td>32</td> </tr> <tr> <td>c:</td> <td>10.75</td> <td>16</td> <td>16</td> <td>16</td> <td>16</td> </tr> <tr> <td>d:</td> <td>1.25</td> <td>3</td> <td>10</td> <td>24</td> <td>24</td> </tr> </table>	Channel Spacing:	3.5	7	14	28	56	a:	2.75	8	8	8	8	b:	9.25	11	18	32	32	c:	10.75	16	16	16	16	d:	1.25	3	10	24	24	<ul style="list-style-type: none"> 168 x 3.5 MHz 83 x 7 MHz 41 x 14 MHz 20 x 28 MHz 10 x 56 MHz 5 x 112 MHz
Channel Spacing:	3.5	7	14	28	56																										
a:	2.75	8	8	8	8																										
b:	9.25	11	18	32	32																										
c:	10.75	16	16	16	16																										
d:	1.25	3	10	24	24																										

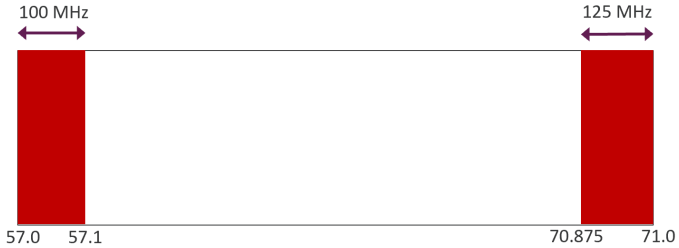
26 GHz	Radio Channels Available in the UK
<p>Please note that this band is no longer available for new fixed wireless links or technical variations.</p>  <p>CEPT Recommendation T/R 13 – 02 E Annex B Channel Duplex Spacing: 1008 MHz</p>	<ul style="list-style-type: none"> 256 x 3.5 MHz 128 x 7 MHz 64 x 14 MHz 32 x 28 MHz 16 x 56 MHz 8 x 112 MHz

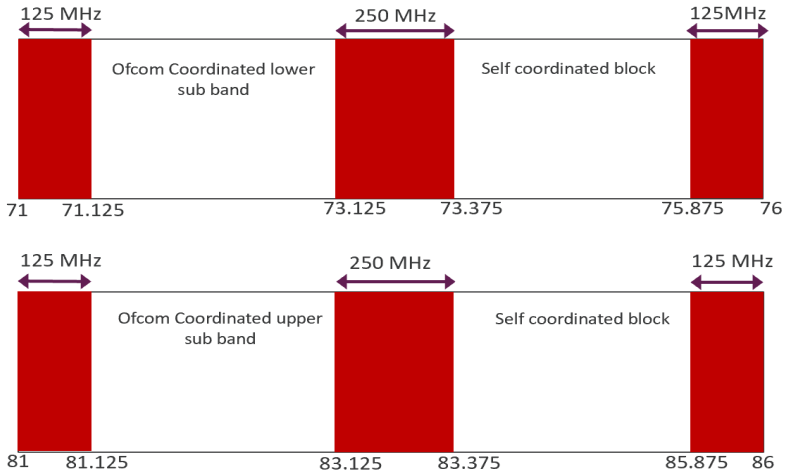
31 GHz	Analogue Baseband (MHz)	Polarisation Options	Radio Channels Available in the UK															
 <p>National Channel Plan based on 28 MHz raster</p> <p>Channel Duplex Spacing: 500.5 MHz</p>	FM in 28 MHz	V	10 x 28 MHz															
<table border="0"> <thead> <tr> <th></th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>Vertical polarisation</td> <td>10</td> <td>10</td> <td>10.5</td> <td>9.5</td> </tr> <tr> <td>Horizontal polarisation</td> <td>24</td> <td>24</td> <td>24.5</td> <td>23.5</td> </tr> </tbody> </table>		a	b	c	d	Vertical polarisation	10	10	10.5	9.5	Horizontal polarisation	24	24	24.5	23.5	FM in 28 MHz	H	9 x 28 MHz
	a	b	c	d														
Vertical polarisation	10	10	10.5	9.5														
Horizontal polarisation	24	24	24.5	23.5														



52 GHz	Radio Channels Available in the UK
 <p>CEPT/ERC/REC 12 – 11 E</p> <p>Channel Duplex Spacing: 616 MHz</p>	<ul style="list-style-type: none">144 x 3.5 MHz72 x 7 MHz36 x 14 MHz18 x 28 MHz9 x 56 MHz

55 GHz	Radio Channels Available in the UK
<p>62 MHz 112 MHz 38 MHz</p> <p>55.78 56.346 56.458 57.0</p> <p>CEPT/ERC/REC 12 – 12 E Channel Duplex Spacing: 616 MHz</p>	<p>144 x 3.5 MHz 72 x 7 MHz 36 x 14 MHz 18 x 28 MHz 9 x 56 MHz</p>

60 GHz	Radio Channels Available in the UK
 <p>100 MHz</p> <p>57.0 57.1</p> <p>125 MHz</p> <p>70.875 71.0</p>	<p>Channel arrangements are not specified for these bands in the UK.</p>

70/80 GHz	Radio Channels Available in the UK	
 <p>Channel Duplex Spacing for Self-Coordinated Block: N/A</p> <p>Channel Duplex Spacing for Ofcom Coordinated Block: 10 GHz</p> <p>CEPT ECC Recommendation (05)07 (Cross band duplex)</p> <p>* The 70/80GHz band has two separate authorisation approaches: i) Ofcom Coordinated & ii) Self Coordinated. The diagram above shows the frequency band splits and separation gap between the two approaches.</p>	<p>Self-Coordinated Blocks</p> <p>Channel arrangements are not specified for these bands in the UK for the self-coordinated block.</p>	<p>Ofcom Coordinated Blocks</p> <ul style="list-style-type: none"> 32 x 62.5 MHz 16 x 125 MHz 8 x 250 MHz 4 x 500 MHz 2 x 750 MHz 2 x 1000 MHz

6. Abbreviations

CEPT	European Conference of Postal and Telecommunications Administrations
EIRP	Equivalent Isotropically Radiated Power
H	Horizontal Polarisation
ITU	International Telecommunication Union
N/A	Not applicable
Ofcom	Office of Communications
RED	Radio Equipment Directive
V	Vertical Polarisation

7. Document history

Version	Published date	Comments
Version 1.0	27 August 2010	Document published
Version 1.1	1 November 2010	Edits to show new 60 GHz band open.
Version 2.0	23 December 2013	Edits to show: <ol style="list-style-type: none"> 1. The new authorisation in the 70/80 GHz band 2. Adding wider channels in the L6, U6, 7.5G, 23G, 18G, 23G, 26G and 38G bands 3. Adding the 56 MHz channels in the 15G band
Version 3.0	29 May 2015	Changes to reflect the reduced availability of channels for new assignments in the 1.4 GHz band
Version 4.0	27 July 2015	Adding 62.5 MHz and 125 MHz channel rasters to the 7080 GHz band Ofcom coordinated block.
Version 5.0	6 October 2016	Changes to reflect changes to the 4 GHz band.
Version 6.0	28 July 2017	Updating channels availability in the 4GHz band to reflect changes to the 4 GHz band.
Version 7.0	5 July 2018	Edits to remove reference to R&TTE Directive replaced by RED and note future changes to 1.4 GHz and 60/65 GHz.

Version	Published date	Comments
Version 8.0	27 November 2018	Changes related to licence exemption of 57-71 GHz.
Version 9.0	2 September 2019	Updates (increases) the number of channels available for assignment in the Ofcom Co-ordinated part of the 70 / 80 GHz band. The update makes the full 2 x 2 GHz available for assignment as part of Occom's channel
Version 10	9 December 2019	Addition of channel arrangements for the 7900-8500 MHz band.
Version 11	5 February 2020	Addition of narrow channels (1.75 and 3.5 MHz) in the upper 6GHz band
Version 12	5 August 2022	Adding text to reflect the closure of 26G band for new fixed link applications and new technical variation applications from the 18 July 2022

8. Contact details

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