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

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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>.

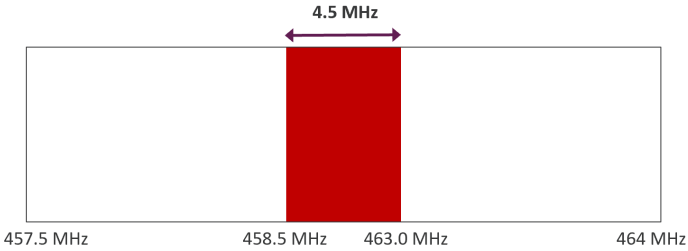
60 GHz

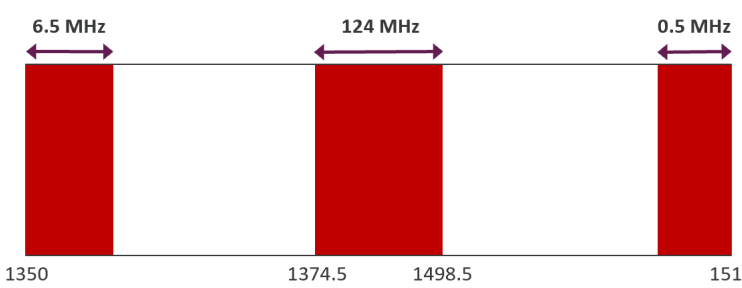
Fixed wireless systems conforming to IR2078 are exempt from licensing in this band.

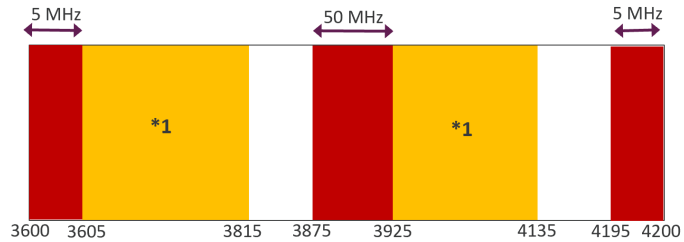
73.375 –75.875 GHz and 83.375-85.875 GHz

These are self-coordinated bands.

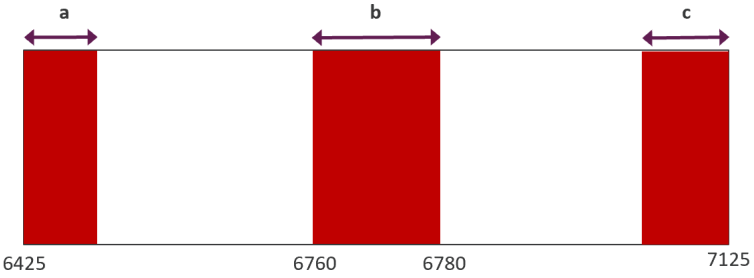
5. Frequency Allocations

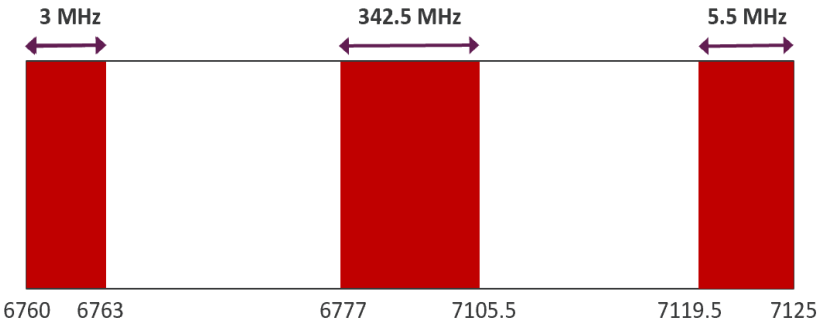
450 MHz	Data Transmission Range (kbit/s)	Cell Structure	Basic parameters
 <p style="text-align: center;">Channel Duplex Spacing: 5.5 MHz</p>	<p>1200 to 2400</p>	<p>6 channels per cell giving 2 channels per utility</p> <p>12 channels per cluster giving a co-channel re-use distance of 150 km</p> <p>A potential 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>

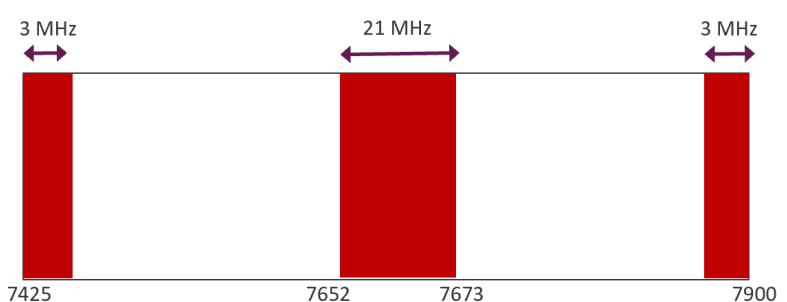
1.4 GHz	Radio Channels Available in the UK
<p>Please note that this band is no longer available for new fixed wireless links or technical variations.</p>  <p>The diagram shows a frequency spectrum from 1350 MHz to 1517 MHz. It is divided into three segments: a 6.5 MHz block from 1350 to 1374.5 MHz, a 124 MHz block from 1374.5 to 1498.5 MHz, and a 0.5 MHz block from 1498.5 to 1517 MHz. Each segment is represented by a red vertical bar with a double-headed arrow above it indicating its width.</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

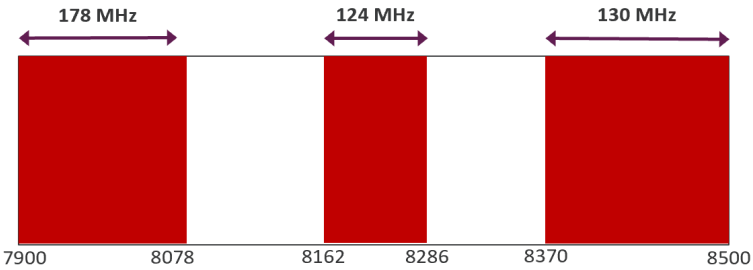
4 GHz	Radio Channels Available in the UK
 <p data-bbox="369 630 840 662">CEPT/ERC/REC 12-08 E Annex A Part 2</p> <p data-bbox="398 686 810 718">Channel Duplex Spacing: 320 MHz</p> <p data-bbox="123 782 649 813"><i>*1 not available from Ofcom for point to point fixed links</i></p>	<p data-bbox="1534 311 1691 343">4 x 15 MHz</p> <p data-bbox="1534 367 1691 399">2 x 30 MHz</p>

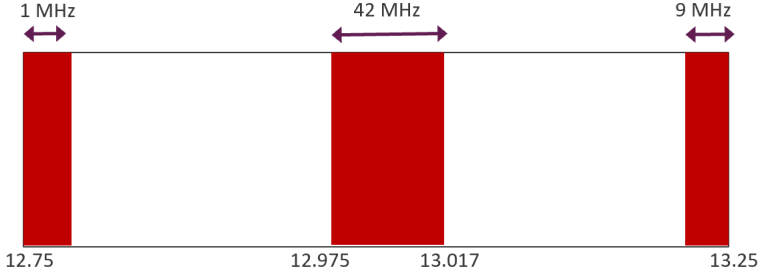
Lower 6 GHz	Radio Channels Available in the UK
 <p data-bbox="409 603 797 630">CEPT/ERC/REC 14 – 01 E Annex 1</p> <p data-bbox="383 655 824 683">Channel Duplex Spacing: 252.04 MHz</p>	<p data-bbox="1525 316 1697 343">8 x 29.65 MHz</p> <p data-bbox="1532 373 1691 400">7 x 59.3 MHz</p>

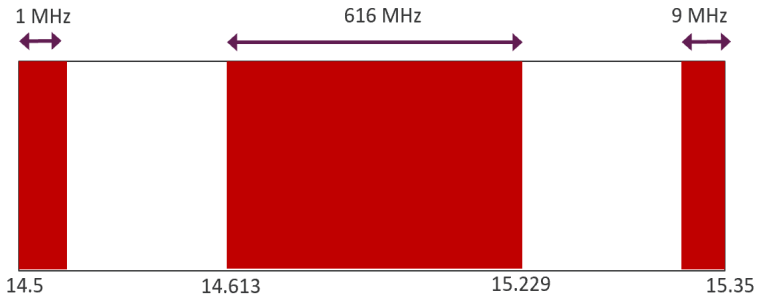
Upper 6 GHz	Radio Channels Available in the UK																		
 <p style="text-align: center;">CEPT/ERC/REC 14 – 02 E</p> <p style="text-align: center;">For 20 MHz and 40 MHz channel arrangements</p> <p style="text-align: center;">Channel Duplex Spacing: 340 MHz</p> <p>Channel Spacing:</p> <table border="0" 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: 30 MHz</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	<p>16 x 20 MHz</p> <p>10 x 30 MHz</p> <p>8 x 40 MHz</p> <p>9 x 60 MHz</p>
	20 MHz	40 MHz																	
a:	5	15																	
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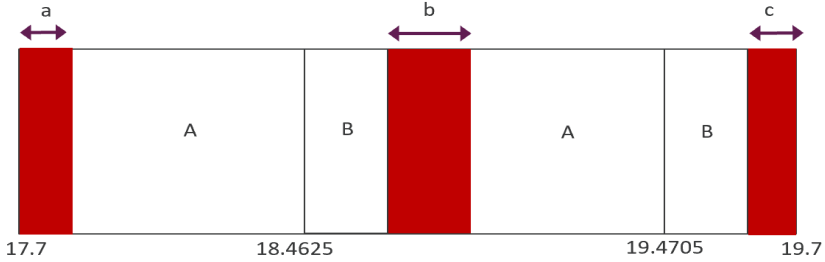
Upper 6 GHz	Radio Channels Available in the UK
<p style="text-align: center;">Low Capacity channels</p>  <p style="text-align: center;">CEPT/ERC/REC 14 – 06 E</p> <p style="text-align: center;">For 1.75 MHz and 3.5 MHz channel arrangements in 14 MHz plan Channel Duplex Spacing: 342.5 MHz</p>	<p style="text-align: center;">4 x 3.5 MHz 8 x 1.75 MHz</p>

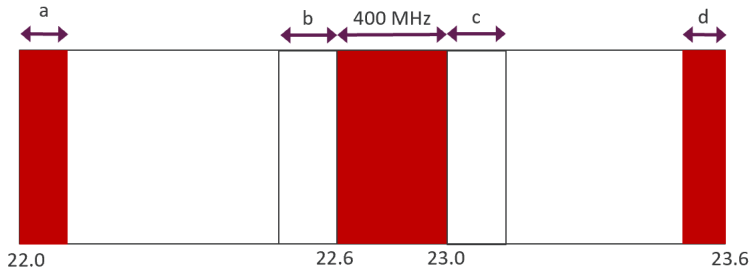
7.5 GHz	Radio Channels Available in the UK
 <p data-bbox="448 750 784 845">ITU-R F.385-9 Annex 4 Channel Duplex Spacing: 245 MHz</p>	<ul data-bbox="1523 303 1702 510" style="list-style-type: none">32 x 7 MHz16 x 14 MHz8 x 28 MHz7 x 56 MHz

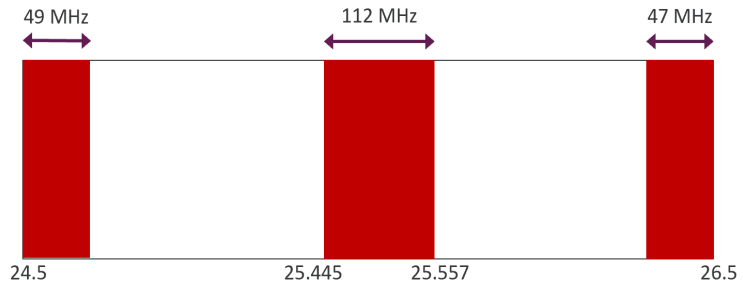
8 GHz	Radio Channels Available in the UK
 <p data-bbox="465 707 741 735">ITU-R F.386-9 Annex 5</p> <p data-bbox="398 762 808 794">Channel Duplex Spacing: 208 MHz</p>	<p data-bbox="1106 316 2119 379">The 8GHz band is shared with MoD. The 8078 to 8162 MHz paired with 8286 to 8370 MHz is available for fixed link assignment.</p> <ul style="list-style-type: none"> <li data-bbox="1543 403 1682 432">12 x 7 MHz <li data-bbox="1543 456 1682 485">6 x 14 MHz <li data-bbox="1543 509 1682 537">3 x 28 MHz

13 GHz	Radio Channels Available in the UK
 <p>1 MHz 42 MHz 9 MHz</p> <p>12.75 12.975 13.017 13.25</p> <p>CEPT/ERC/REC 12 – 02 E – Annex A</p> <p>Channel Duplex Spacing: 266 MHz</p>	<p>128 x 1.75 MHz</p> <p>64 x 3.5 MHz</p> <p>32 x 7 MHz</p> <p>16 x 14 MHz</p> <p>8 x 28 MHz</p> <p>7 x 56 MHz</p>

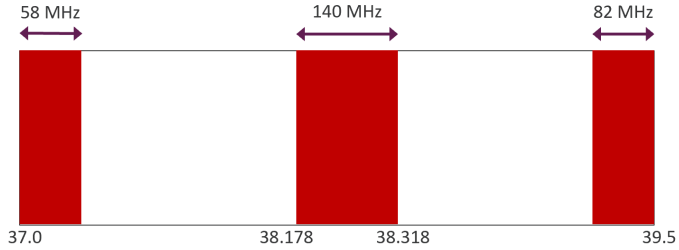
15 GHz	Radio Channels Available in the UK
 <p style="text-align: center;">CEPT/ERC/REC 12 – 07 E Channel Duplex Spacing : 728 MHz</p>	<ul style="list-style-type: none"> 64 x 1.75 MHz 32 x 3.5 MHz 16 x 7 MHz 8 x 14 MHz 4 x 28 MHz 2 x 56 MHz

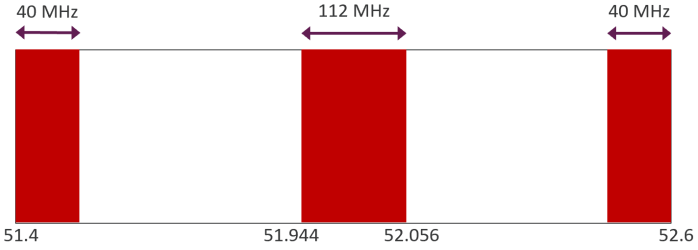
18 GHz	Radio Channels Available in the UK
 <p>Channel Spacing: 3.5 7 13.75 27.5 55</p> <p> a: - - 6.875 13.75 27.5</p> <p> b: - - - - -</p> <p> c: 19.5 26.5 - - -</p> <p>Note: The dimensions of Guard Bands are variable and dependent on the channel raster used. Dimensions are given here where channel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

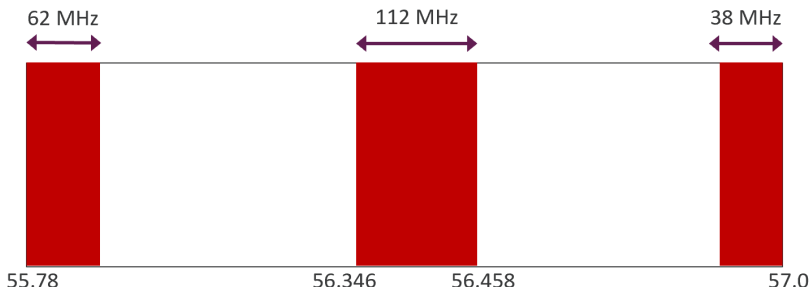
23 GHz	Radio Channels Available in the UK																														
 <p data-bbox="257 683 952 715">CEPT Recommendation T/R 13 – 02 E Annex A (modified)</p> <p data-bbox="392 734 817 766">Channel Duplex Spacing: 1008 MHz</p> <table data-bbox="123 837 862 1077"> <tr> <td>Channel Spacing:</td> <td>3.5</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	<p data-bbox="1523 319 1702 343">168 x 3.5 MHz</p> <p data-bbox="1523 367 1680 391">83 x 7 MHz</p> <p data-bbox="1523 422 1691 446">41 x 14 MHz</p> <p data-bbox="1523 470 1691 494">20 x 28 MHz</p> <p data-bbox="1523 518 1691 542">10 x 56 MHz</p> <p data-bbox="1523 566 1691 590">5 x 112 MHz</p>
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																										

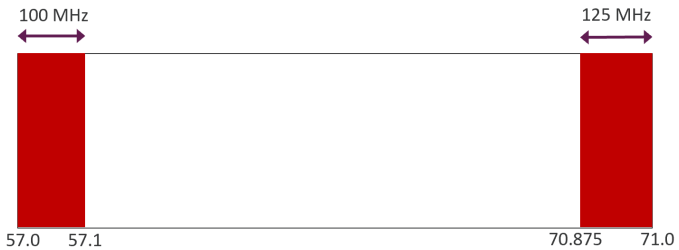
26 GHz	Radio Channels Available in the UK
 <p>49 MHz 112 MHz 47 MHz</p> <p>24.5 25.445 25.557 26.5</p> <p>CEPT Recommendation T/R 13 – 02 E Annex B Channel Duplex Spacing: 1008 MHz</p>	<ul style="list-style-type: none"> 256 x 3.5 MHz 128 x 7 MHz 64 x 14 MHz 32 x 28 MHz 16 x 56 MHz 8 x 112 MHz

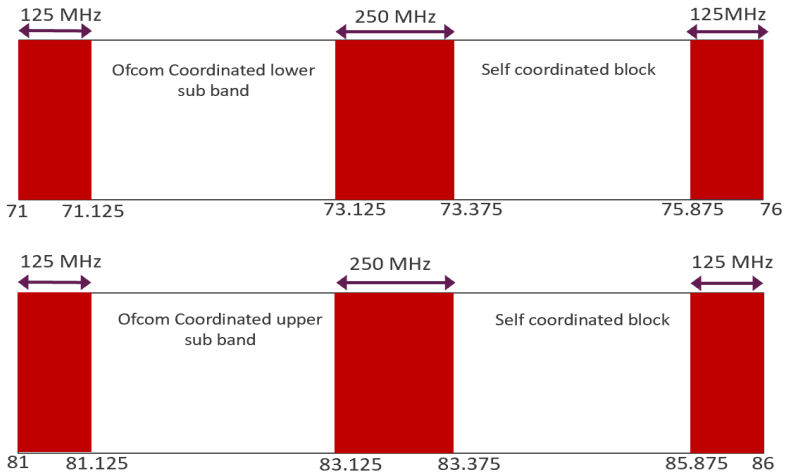
31 GHz	Analogue Baseband (MHz)	Polarisation Options	Radio Channels Available in the UK															
<p data-bbox="320 635 887 663">National Channel Plan based on 28 MHz raster</p> <p data-bbox="387 687 819 716">Channel Duplex Spacing: 500.5 MHz</p> <table border="1" data-bbox="114 794 1088 927"> <thead> <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	V	10 x 28 MHz
	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															

38 GHz	Radio Channels Available in the UK
 <p>CEPT Recommendation T/R 12 – 01 E Channel Duplex Spacing: 1260 MHz</p>	<ul style="list-style-type: none">320 x 3.5 MHz160 x 7 MHz80 x 14 MHz40 x 28 MHz20 x 56 MHz10 x 112 MHz

52 GHz	Radio Channels Available in the UK
 <p style="text-align: center;"> CEPT/ERC/REC 12 – 11 E Channel Duplex Spacing: 616 MHz </p>	<ul style="list-style-type: none"> 144 x 3.5 MHz 72 x 7 MHz 36 x 14 MHz 18 x 28 MHz 9 x 56 MHz

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

60 GHz	Radio Channels Available in the UK
 <p>The diagram illustrates two frequency bands within the 60 GHz range. The first band is located between 57.0 GHz and 57.1 GHz, with a width of 100 MHz. The second band is located between 70.875 GHz and 71.0 GHz, with a width of 125 MHz. Both bands are represented by red vertical bars.</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	New 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 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 Ofcom's channel assignment policy.
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

8. Contact details

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