

UK Interface Requirement 2000

Point-to-Point Radio-Relay Systems Operating in Fixed Service Frequency
Bands Administered by Ofcom

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Abbreviations

ATPC	Adaptive Transmitter Power Control
CEPT	European Conference of Postal and Telecommunications Administrations
DTI	Department of Trade and Industry
EC	European Commission
EN	European Normative (European Standard)
ETSI	European Telecommunications Standard Institute
GHz	Gigahertz
Ofcom	Office of Communications
ITU	International Telecommunications Union
ITU-R	ITU Radiocommunications Sector
km	kilometre
MHz	Megahertz
N/A	Not Applicable
NATO	North Atlantic Treaty Organisation
STM	Synchronous Transport Module

Section 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 2000, 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 licensing and use of point to point fixed link radio systems in the specified frequency bands.
- 1.2 Nothing in this UK Interface Requirement shall preclude the need for equipment and antennas to comply with, or impose any additional requirements to, those requirements set out in 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 Ofcom. 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.
- 1.4 The requirements given in the main body of this UK Interface Requirement will apply to the licensing of point to point fixed link radio relay systems. All frequency bands administered by Ofcom in the UK for point to point fixed link services are covered.
- 1.5 This UK Interface Requirement will be revised as necessary to reflect changing requirements.
- 1.6 UK operators and manufacturers have been consulted through the development of this UK Interface Requirement, including the assumptions made for the technical Frequency Assignment Criteria (based on the planning and propagation aspects required to assign point to point fixed links radio relay systems).
- 1.7 All UK Interface Requirements notified under Directive 1998/34/EC will be published and will be made available free of charge from the Ofcom web-site at <http://www.ofcom.org.uk>
- 1.8 Further information on this UK Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

Section 2

Assignment conditions and frequency planning within the UK

- 2.1 The 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 Interface Requirement gives a high level description of how the spectrum in the UK is used for point to point fixed link radio relay systems. It does not prescribe technical interpretation of the 'essential requirements' of Directive 1999/5/EC.
- 2.3 This UK Interface Requirement therefore sets out the channel occupation rules and frequency planning assumptions appropriate to each of the frequency bands set out in Table 2.1.
- 2.4 Conformance with Harmonised Standards provides a presumption of compliance with those 'essential requirements' of Directive 1999/5/EC as covered by the said Harmonised Standards.
- 2.5 Directive 98/34/EC requires Member States to notify technical regulations, such as this Interface Requirement, to the European Commission in advance in order to give the Commission and other Member States the opportunity to consider and, if thought fit, object to their implementation.
- 2.6 The Technical Frequency Assignment Criteria, referenced in Annex A, Table A2, describe the principles used to assign the minimum EIRP required to meet the desired performance objective for a point to point fixed link radio relay system. Assignment methodology is based on 'reasonable use' of equipment and assignment principles to encourage the efficient use of the radio spectrum. Ofcom may preclude systems that are not considered suitable for deployment in the UK.
- 2.7 The UK believes that this UK Interface Requirement brings maximum benefit to the point to point fixed links industry while promoting enterprise, innovation and competition.
- 2.8 The choice of frequency band in the UK depends principally on the link path length and traffic capacity. Ofcom operates a 'Minimum Path Length Policy' in order that the appropriate frequency band is utilised for a given link. The policy sets out minimum path length values in each band in order to encourage the use of higher frequencies for shorter paths, thus avoiding a disproportionate use of the lower bands. Links requiring path lengths shorter than those set out in the policy are considered on a case-by-case basis.

2.9 This UK Interface Requirement therefore sets out the (high level) assignment conditions and planning assumptions made with respect to the planning of point to point fixed radio relay systems in the UK.

Table 2.1: Minimum equipment requirements

Frequency Range (M/GHz)	Channelling	Channel Occupation Rules	Assignment Conditions	Remarks
		Minimum Link Length (km) (Applies to systems using data rates above 2 Mbit/s)		
1350 – 1517 MHz	CEPT Recommendation T/R 13-01E	<p>Lower data rates: 30 km</p> <p>Higher data rates: N/A</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 6, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
3600 – 4200 MHz	CEPT Recommendation 12-08E	<p>Lower data rates: 24.5 km</p> <p>Higher data rates: 16 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	

5925 – 6425 MHz	CEPT Recommendation 14-01E	<p>Lower data rates: N/A</p> <p>Higher data rates: 16 km</p> <p>See note 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
6425 – 7125 MHz	CEPT Recommendation 14-02E	<p>Lower data rates: N/A</p> <p>Higher data rates: 16 km</p> <p>See note 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
7425 – 7900 MHz	ITU-R Recommendation 385-6, Annex 4	<p>Lower data rates: 15.5 km</p> <p>Higher data rates: 9.5 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
12.75 – 13.25 GHz	CEPT Recommendation 12-02E	<p>Lower data rates: 9.5 km</p> <p>Higher data rates: 5.5 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	

14.50 – 15.35 GHz	CEPT Recommendation 12-07E	<p>Lower data rates: 9.5 km</p> <p>Higher data rates: 5.5 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 10, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
17.7 - 18.45625GHz paired with 18.70 - 19.46625 GHz	CEPT Recommendation 12-03 E	<p>Lower data rates: 4.0 km</p> <p>Higher data rates: 2.5 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
18.4625 - 18.7 GHz paired with 19.4705 - 19.70 GHz	ITU-R Recommendation F.595 (for 3.5 MHz and 7 MHz assignments)	<p>Lower data rates: 4.0 km</p> <p>Higher data rates: N/A</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
22.00 – 23.60 GHz	CEPT Recommendation T/R 13-02E	<p>Lower data rates: 4.0 km</p> <p>Higher data rates: 2.0 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	

<p>24.50 – 26.50 GHz</p>	<p>CEPT Recommendation T/R 13-02E, Annex B</p>	<p>Lower data rates: 3.0 km Higher data rates: 2.0 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
<p>31.00 – 31.80 GHz</p>	<p>Technical Frequency Assignment Criteria OfW31</p> <p>National channel plan based on 28 MHz raster with duplex spacing equal to 500.5 MHz</p>	<p>N/A</p> <p>See note 20 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
<p>31.80 – 33.40 GHz</p>	<p>CEPT Recommendation T/R 01-02E</p>	<p>Lower data rates: 2.0 km Higher data rates: 1.5 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 5, 7, 8, 9, 11, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	
<p>37.00 – 39.50 GHz</p>	<p>CEPT Recommendation T/R 12-01E</p>	<p>Lower data rates: 1.0 km Higher data rates: 1.0 km</p> <p>See notes 18 and 19 in Table A1 of Annex A</p>	<p>See notes 1, 4, 7, 8, 9, 14 and 21 in Table A1 of Annex A</p> <p>See Table A2 of Annex A</p>	

51.40 – 52.60 GHz	CEPT Recommendation 12-11E	N/A See note 20 in Table A1 of Annex A	See notes 1, 4, 7, 8, 9, 12, 14 and 21 in Table A1 of Annex A See Table A2 of Annex A	
55.78 – 57.00 GHz	CEPT Recommendation 12-12E	N/A See note 20 in Table A1 of Annex A	See notes 1, 4, 7, 8, 9, 13, 14 and 21 in Table A1 of Annex A See Table A2 of Annex A	
57.00 – 59.00 GHz	CEPT Recommendation T/R 12-09E	N/A See note 20 in Table A1 of Annex A	See notes 1, 4, 7, 16, 17, 21, 22, 23 and 24 in Table A1 of Annex A See Table A2 of Annex A	
64.00 – 66.00 GHz		N/A See note 20 in Table A1 of Annex A	See notes 2, 3, 7, and 15 and 21 in Table A1 of Annex A See Table A2 of Annex A	

Section 3

Annex A

1	Radio equipment and antennas deployed in this band must comply with the essential requirements of Directive 1995/5/EC. For frequency planning purposes it is assumed that the appropriate specifications set out in ETSI EN 302 217 are met.
2	Radio equipment and antennas deployed in this band must comply with the essential requirements of Directive 1995/5/EC. For frequency planning purposes It is assumed that the appropriate specifications set out in ETSI TS 102 329 are met.
3	Radio systems meeting ETSI spectral efficiency class 1 and above which meet the stated channel arrangements may be deployed in this band.
4	Radio systems meeting ETSI spectral efficiency class 2 and above which meet the stated channel arrangements may be deployed in this band.
5	Radio systems meeting ETSI spectral efficiency class 3 and above which meet the stated channel arrangements may be deployed in this band.
6	Antennas corresponding to ETSI class 1 (ETSI EN 302 217) and above may be deployed in this band.
7	Antennas corresponding to ETSI class 2 (ETSI EN 302 217) and above may be deployed in this band.
8	Operators will be encouraged to use the higher performance antenna options on congested sites. They may also be advised to use a higher performance antenna when assignments are otherwise impossible.
9	The operational EIRP will be determined on the basis of the minimum power required to meet the performance objectives declared by the licence applicant and will be specified as a licence condition.
10	National Co-ordination with the Ministry of Defence will be required due to a 1MHz incursion into the NATO band 14.62 – 15.23 GHz by the lower edge of the sub-band 15.229 – 15.35 GHz, for the lowest specified channel.
11	Assignments are available in the upper third of the two sub-bands: 32.319 – 32.571 GHz duplexed with 33.131 – 33.383 GHz.

12	Staged band release: the first stage covers sub-bands 51.40 – 51.608 GHz duplexed with 52.056 – 52.224 GHz.
13	Staged band release: the first stage covers sub-bands 55.780 –56.010 GHz duplexed with 56.458 – 56.626 GHz.
14	Licensed band - inter and intra service sharing studies and co-ordination functions performed by Ofcom.
15	Light licensed band - no formal sharing studies or co-ordination functions performed by Ofcom.
16	Licence exempt band - Licence exemption is permitted in this band under 'The Wireless Telegraphy (Exemption) Regulation 2002'.
17	Uncoordinated (unprotected) frequency band – no formal sharing studies or co-ordination functions performed by Ofcom.
18	Lower data rates are defined as those data rates above 2 Mbit/s and excluding 140 Mbit/s, STM-1 and 2 × STM-1.
19	Higher data rates are defined as those equal to 140 Mbit/s, STM-1 or 2 × STM-1.
20	The Minimum Path Length policy does not apply to the 31, 52, 55, 58 and 65 GHz bands.
21	Ofcom will consult and agree frequency band management strategies with industry regarding the use of state of the art radio equipment and antennas in the UK.
22	CEPT Recommendation 1209E sets an EIRP limit of 25 dBW associated with a maximum transmitter output power limit of 10 dBm in the 57.0 -59.0 GHz band. EIRP and transmitter output power are restricted to these limits.
23	Operators are exempt from the site clearance process on the basis that the following conditions are met: 1)The maximum height of the antenna or its supporting structure do not exceed 30 metres above ground level; 2) A new installation does not increase the height of an existing site by 5 metres or more. Operators wishing to plan links that do not meet these conditions should discuss their planning requirement with Ofcom engineers.
24	100 MHz channels in the ranges 57.0 to 57.1 and 58.9 to 59.0 GHz are to not be used for License exempt deployment.

Table A2: Technical Frequency Assignment Criteria

Band	Technical Frequency Assignment Criteria
1350-1517 MHz	OfW46
3600-4200 MHz	OfW30
5925-6425 MHz and 6425-7125 MHz	OfW45
7425-7900 MHz	OfW47
12.75-13.25 GHz and 14.50 - 15.35 GHz	OfW44
17.70 - 19.70 GHz	OfW50
22.00 - 23.60 GHz and 24.50 - 26.50 GHz	OfW43
31.00 - 31.80 GHz	OfW31
31.80 - 33.40 GHz and 37.00 - 39.50 GHz	OfW42
51.40 - 52.60 GHz and 55.78 - 57.00 GHz	OfW32
57.00 - 59.00 GHz	N/A

Section 4

Document history

Version	Date	Changes
5.0	09 2003	Published
6.0	07 2005	Revision of Assignment and Planning Conditions at 58 GHz plus editorial changes

Section 5

Contact details

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