



**UK Interface Requirement 2005  
Wideband Transmission Systems  
Operating in the 2.4 GHz ISM Band  
and Using  
Spread Spectrum Modulation Techniques  
(Version 1.0)**

98/34/EC Notification Number: 2000/274/UK

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## References

- ETS 300 328 ETSI Telecommunication Standard – Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques.

## **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 wideband transmission systems operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques.
- 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 wideband transmission systems operating in the 2.4 GHz ISM band, using spread spectrum modulation techniques, in the UK.
- 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 wideband transmission systems.
- 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 wideband transmission systems operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques. 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 necessary equipment parameters for the use of wideband transmission systems operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques in the UK. Table 2.1 contains 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 wideband transmission systems operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques within the UK.

**Table 2.1: Minimum Equipment Requirements**

<b>Operational Frequency Range</b>	<b>Lower Frequency Range</b>	<b>Upper Frequency Range</b>
	2400 MHz	2483.5 MHz
<b>Minimum aggregate bit rate</b>	250 kBit/s	
<b>Modulation</b>	Frequency hopping, direct sequence or other forms of spread spectrum modulation	
<b>Effective Radiated Power</b>	-10 dBW (100 mW)	
<b>Power Density</b>	<b>Frequency hopping</b>	<b>Other forms of spread spectrum modulation</b>
	-10 dBW (100 mW) per 100 kHz	-20 dBW (10 mW) per 1 MHz

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

- A.1 Tables A1 to A3 stipulate additional performance parameters and limits that the Radiocommunications Agency assume are fulfilled by wideband transmission systems operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques when planning and managing the radio spectrum in the UK.
- A.2 Equipment that does not fulfil these additional performance parameters and limits will not be guaranteed protection in the case of interference.
- A.3 Where equivalent performance parameters and limits are defined in relevant harmonised standards under Directive 99/5/EC, those limits shall take precedence.
- A.4 The additional performance parameters and limits contained in this annex are based on ETS 300 328

## Notes

1. It is assumed that equipment will meet, where indicated, the levels in tables 2.3 and 2.4 under normal and extreme conditions as defined in Table 2.2. Manufacturers are free to declare different reasonable operating conditions. In such cases it is the responsibility of the user to ensure they operate the equipment within these conditions.

2. The limits given in these tables assume that equipment performance is assessed using the test methods contained in ETR 027 (Radio Equipment and Systems (RES); Methods of Measurement for Private Mobile Radio Equipment) and the requirements contained in EN 300 793 (Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Land Mobile Service; Presentation of Equipment for Type Testing).

**Table A1: Additional Performance Parameters - Operating Conditions**

Environmental Conditions		Temperature	Relative Humidity
	Normal conditions	+15°C to +35°C	20% to 75%
	Extreme conditions	-20°C to +55°C	20% to 75%
Mains voltage	Normal conditions	Nominal mains voltage	
	Extreme conditions	Nominal mains voltage $\pm$ 10 %	

**Table A2: Additional Performance Parameters - Transmitter**

Spurious emissions		Frequency range	Tx operating	Tx Standby
	Narrowband emissions	30 MHz to 1 GHz	0.25 $\mu$ W (-36 dBm)	2.0 nW (-57 dBm)
		1 GHz to 12.75 GHz	1 $\mu$ W (-30.0 dBm)	20 nW (-47.0 dBm)
		1800 to 1900 MHz	-47 dBm	-47 dBm
		5150 to 5300 MHz	-47 dBm	-47 dBm
	Wideband emissions	30 MHz to 1 GHz	-86 dBm/Hz	-107 dBm/Hz
		1 GHz to 12.75 GHz	-80 dBm/Hz	-97 dBm/Hz
		1800 to 1900 MHz	-97 dBm/Hz	-97 dBm/Hz
		5150 to 5300 MHz	-97 dBm/Hz	-97 dBm/Hz

**Table A3: Additional Performance Parameters – Receiver**

Spurious emissions		Frequency range	
	Narrowband emissions	30 MHz to 1 GHz	2.0 nW (-57 dBm)
		1 GHz to 12.75 GHz	20 nW (-47.0 dBm)
	Wideband emissions	30 MHz to 1 GHz	-107 dBm/Hz
		1 GHz to 12.75 GHz	-97 dBm/Hz

## Document history

Draft	Date	Changes

### Radiocommunications Agency

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