

UK Interface Requirement 2003

Private Business Paging Services

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References

ETS 300 224	ETSI Telecommunication Standard – Electromagnetic compatibility and Radio spectrum Matters (ERM); On-site paging service; Technical and functional characteristics for on-site paging systems, including test methods.
ETS 300 719-1	ETSI Telecommunication Standard – Radio Equipment and Systems (RES); Private wide area paging service; Part 1: Technical characteristics for private wide-area paging systems.
ETS 300 719-2	ETSI Telecommunication Standard – Radio Equipment and Systems (RES); Private wide area paging service; Part 2: Functional characteristics and access protocol for private wide-area paging systems on shared channels.
MPT 1314	Department of Trade and Industry Performance Specification – On transmitting and receiving equipment for use in the PMR local communication service
MPT 1325	Department of Trade and Industry Performance Specification – On VHF and UHF radio transmitters for use in base stations in the wide area paging service.
MPT 1335	Department of Trade and Industry Performance Specification – On paging transmitters and receivers for use in the on-site paging service in the frequency band.
MPT 1365	Department of Trade and Industry Performance Specification – On paging transmitters and receivers for use in the on-site paging service in the 26 MHz and 31 MHz frequency bands.

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 private business paging services systems in the specified frequency bands.
- 1.2 Nothing in this UK 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 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 for the stated equipment types and for the stated frequency bands.
- 1.4 The requirements given in the main body of this UK Interface Requirement will apply in the licensing of private business paging services in the UK.
- 1.5 This UK 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 private business paging services systems.
- 1.6 All UK Interface Requirements notified under Directive 98/34/EC will be published and will be made available free of charge from the Ofcom website. The address for the website is given on the back cover of this document.
- 1.7 Further information on this UK 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 radio 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 private business paging services systems. It does not prescribe a technical interpretation of the 'essential requirements' of Directive 1999/5/EC.
- 2.3 This UK Interface Requirement therefore stipulates the necessary equipment parameters for the licensing of private business paging services equipment 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 for private business paging service equipment within the UK.

Table 2.1: Minimum Equipment Requirements

Operational Frequency Range	Lower Frequency Range	Upper Frequency Range	Additional Technical Information
	26.23 MHz	26.87 MHz	1. Not all frequencies within these ranges are available for licensing. 2. Equipment may also be capable of operating on additional frequencies.
	31.725 MHz	31.775 MHz	
	49.0 MHz	49.48 MHz	
	449.4875 MHz	462.5 MHz	
Channel Spacing	12.5 kHz or 25 kHz		
Modulation	Angle		
Output Power	Up to 100 W (maximum effective radiated power)	Maximum operating power for an individual installation will be a condition of the licence. A maximum erp of less than 100 W may be set	
Effective Radiated Power for on-site services	Base transmitter $\leq 5W$ Pocket transmitter $\leq 0.05 W$		

Annex A: Additional Performance Parameters (Informative)

- A.1 Tables A.1, to A.5 stipulate additional performance parameters and limits that the Radiocommunications Agency assume are fulfilled by private business paging equipment 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 the following reference standards.

ETS 300 224

ETS 300 719

MPT 1314

MPT 1325

MPT 1335

MPT 1365

Notes

1. It is assumed that equipment will meet, where indicated, the levels in tables A2, A3, A4 and A5 under normal and extreme conditions as defined in Table A1. 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	Additional Technical Information
	Normal conditions	+15°C to +35°C	20% to 75%	
	Extreme conditions	1.-20°C to +55°C 2.-10°C to +55°C 3.-10°C to +55°C	20% to 75%	For base station equipment Transcoder used in temperature controlled environments For pocket receiver equipment
Mains voltage	Normal conditions	Nominal mains voltage		
	Extreme conditions	Nominal mains voltage ± 10 %		

Table A2: Additional Performance Parameters - Transmitter

Adjacent channel power	Normal conditions			Extreme conditions	
12.5 kHz channel separation	-60 dBc, without the need to be below 0.2 μ W			-55 dBc, without the need to be below 0.2 μ W	
25 kHz channel separation	-70 dBc, without the need to be below 0.2 μ W			-65 dBc, without the need to be below 0.2 μ W	
Spurious emissions		Frequency range	Tx operating		Tx Standby
On-site services	Conducted	9 kHz to 1 GHz	0.25 μ W (-36 dBm)		2.0 nW (-57 dBm)
		1 GHz to 4 GHz	1 μ W (30.0 dBm)		20 nW (-47.0 dBm)
	Radiated	30 MHz to 1 GHz	0.25 μ W (-36 dBm)		2.0 nW (-57 dBm)
		1 GHz to 4 GHz	1 μ W (30.0 dBm)		20 nW (-47.0 dBm)
Wide area services	Transmitter state		Frequencies \leq 1000 MHz		Frequencies above 1000 MHz
	Operating		250 nW		1 μ W
	Stand by		2 nW		20nW
Carrier power tolerance	Normal conditions			Extreme conditions	
	\pm 1.5 dB			-3/+2 dB	
Frequency deviation for on site services	2.5 kHz				
	5 kHz				
Selective Signalling	Digitally Coded Squelch (DCS) or Continuous tone control and signalling system (CTCSS)				
Frequency error	Less than 47 MHz	47 MHz to 137 MHz	137 MHz to 300 MHz	300 to 470 MHz	
12.5 kHz channel separation	\pm 0.60 kHz	\pm 1 kHz	\pm 1 kHz (base) \pm 1.5 kHz (portable)	\pm 1 kHz (base) \pm 2.5 kHz (portable)	
25 kHz channel separation	\pm 0.60 kHz	\pm 1.35 kHz	\pm 2 kHz	\pm 2 kHz (base) \pm 2.5 kHz (portable)	
Transmitter Intermodulation attenuation for wide area services	At least 40 dB				

Table A3: Additional Performance Parameters - Receiver

Co-channel rejection	Analogue Speech	Messages
12.5 kHz channels	Between -12 dB and 0 dB relative to +6 dB μ V	Between -12 dB and 0 dB relative to +6 dB μ V
25 kHz channels	Between -8 dB and 0 dB relative to +6 dB μ V	Between -8 dB and 0 dB relative to +6 dB μ V
Adjacent channel selectivity	Normal conditions	Extreme conditions
	Analogue speech/Messages	Analogue speech/Messages
12.5 kHz channels	Minimum 60 dB relative to +6 dB μ V	Minimum 50 dB relative to +6 dB μ V
25 kHz channels	Minimum 70 dB relative to +6 dB μ V	Minimum 60 dB relative to +6 dB μ V
Spurious response immunity	Not less than 70 dB relative to +6 dB μ V	
Intermodulation immunity	Not less than 60 dB relative to +6 dB μ V	
Blocking or desensitisation	Not less than 70 dB relative to +6 dB μ V	
Spurious emissions	9 kHz to 1 GHz	1 to 4 GHz
	2.0 nW (-57 dBm)	20.0 nW (-47 dBm)
Receiver response rejection	67 dB relative to +6 dB μ V	
Measured sensitivity for digital messages for pocket paging receivers	Not exceeding +36 dB μ V/m	

Table A4: Additional Performance Parameters – Behaviour of Base station transients

Transient time	Carrier frequency ≤ 300 MHz	Carrier frequency > 300 MHz	Maximum frequency deviation
t1	5 ms	10 ms	1.0 channel separation
t2	20 ms	25 ms	0.5 channel separation
t3	5 ms	10 ms	1.0 channel separation

Notes:

- t1: period of time during which frequency tolerance f1 applies;
t2: period of time during which frequency tolerance f2 applies;
t3: period of time during which frequency error on the carrier applies;
f0: frequency tolerance in steady state;
f1: frequency difference which shall be less than one channel separation;
f2: frequency difference which shall not be greater than half the channel separation;

Table A5: Additional Performance Parameters – Inductive loop systems

Transmitter maximum carrier power	20 W	
Frequency error	$\pm 1\%$	
Transmitter Spurious emissions	Conducted emissions	Radiated emissions
9 kHz-16 kHz	-40 dBc	Descending from 53 dB μ A/m to 48 dB μ A/m
146 kHz-1 MHz	$\leq 1\mu$ W	Descending from 28.5 dB μ A/m to 12 dB μ A/m
1 MHz-25 MHz	≤ 250 nW	Descending from 12 dB μ A/m to 2 dB μ A/m
Receiver spurious emissions		
9 kHz-16 kHz	Descending from 41 dB μ A/m to 36dB μ A/m	
146 kHz-1 MHz	Descending from 16.5 dB μ A/m to 0 dB μ A/m	
1 MHz-25 MHz	Descending from 0 dB μ A/m to -10 dB μ A/m	

Document history

Draft	Date	Changes
Ver 2.0	17 June 03	Amendment to frequency range

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