

MPT 1601

**Technical requirements for the testing,
type approval and licensing of Short
Range Radio Devices for Remote Meter
Reading in the frequency band
183.5 MHz to 184.5 MHz**

Revised and reprinted May 1997

© Crown Copyright 1996
First published November 1993
Revised and Reprinted May 1997

Blank page

Contents

FOREWORD	7
1 SCOPE	9
2 DEFINITIONS	9
3 GENERAL	9
3.1 Transmitter height limitations	9
3.2 Categories of equipment	9
4 TECHNICAL PARAMETERS	10

Blank Page

FOREWORD

It is required by the Wireless Telegraphy Act, 1949 that no radio apparatus shall be installed or used in the United Kingdom except under the authority granted by the Secretary of State. It is a condition of this authority that the performance of the apparatus must meet certain minimum standards. These minimum standards of performance are given in this MPT 1601 "Technical requirement for testing and type approval", which was prepared by the Radiocommunications Agency in consultation with manufacturers and other interested bodies.

Applicants who wish to submit equipment for type testing should apply to one of the accredited test houses. A current list of accredited test houses and guidance for applicants is given in RA Information Sheet RA207 "Type Approval - UK Type Approval Requirements for Land Mobile and Maritime Radio Radiocommunications Equipment". Equipment submitted for type testing shall be tested in accordance with the European Telecommunications Standards Institute interim standard I-ETS 300 220 "Radio Equipment and Standards (RES); Short range devices technical characteristics and test methods for radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels up to 500 mW".

Equipment will be considered for approval purposes either:

- a) by direct compliance with MPT 1601; or
- b) compliance with any national standard or government regulation of any member state of the European Communities; or
- c) any relevant international standard or regulation recognised in a Member State of the European Communities;
- d) and where appropriate compliance with manufacturing rules and procedures of any member state relating to quality control operations during manufacture of the equipment where they form part of a standard or technical regulations in (a) to (c) above;

provided that in each case the standard or regulation is deemed to conform with MPT 1601.

The results of tests to such a standard will be taken into consideration if carried out by authorised and accredited test houses in accordance with ISO guides 25 and 38 or EN 45001 and EN 45002 or a national standard conforming to these requirements.

The application should be accompanied by a description of the apparatus, including drawings and test results obtained in the manner described in the appropriate standard. The intended use must comply with the scope of the specification.

It should also list all type numbers that may apply to non-technical variants of the model submitted.

The Radiocommunications Agency also reserve the right to decide which channel separation will apply for an item of equipment.

This specification was notified to the EU under Directive 83/189/EEC.

For aspects relating to electromagnetic compatibility, the equipment covered by this MPT 1601 shall be in conformity with the Statutory Instrument No. 2372 (1992) implementing the EMC Directive 89/336/EEC. The appropriate voluntary EMC standard is prETS 300 683 "ElectroMagnetic Compatibility (EMC) Standard for Short Range Devices (SRD) operating on frequencies between 9 kHz and 25 GHz".

For aspects relating to electrical safety, the equipment covered by this MPT 1601, where applicable, shall be in conformity with either Directive 73/23/EEC "Council Directive of 19 February 1973 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits" or the appropriate national regulations implementing this Directive.

Copies of RA Information Sheets and MPTs are available from; The Library, Radiocommunications Agency, New King's Beam House, 22 Upper Ground, LONDON, SE1 9SA. Telephone +44 171 211 0211.

Copies of Statutory Instruments are available from HMSO Publications Centre PO Box 276 LONDON SW8 5DT, Telephone number +44 171 873 9090, or from HMSO Book shops.

Copies of ETSI standards are available from BSI sales; BSI Sales, Linford Wood, MILTON KEYNES, MK14 6LE.

It may be necessary for amendments to this specification to be issued. Amendment sheets will be available from the RA Information and Library Service.

For the latest information concerning Type Approval Status and Licensing conditions, refer to the RA Information Sheet 'RA 275: Status of Land Mobile Radio Specifications (MPT 1300 series)'. This publication also contains contact names and telephone numbers for Agency staff who are able to assist you with licensing and technical enquiries and is available on a single copy basis free from the RA Information & Library Service.

This revision was required in order to allow for;

- a) This document to be updated in line with the Agency's current Standard format and layout for the MPT series specifications.
- b) To allow for changes for 100mW transmitters.
- c) Various editorial changes.

The Radiocommunications Agency has a 'web site' which can be accessed on <http://www.open.gov.uk/radiocom/rahome.htm>. It is planned that all of the MPT series of specifications will be available on here.

Radiocommunications Agency
Information & Library Service
Kings Beam House
22 Upper Ground
London
SE1 9SA

Tel: 0171 211 0211
Fax: 0171 211 0507

For further information on all radio matters please contact the Agency's 24 Hour Telephone Service:
0171 211 0211

1 SCOPE

This document defines radio equipment designed for use in the 183.5 to 184.5 MHz band assigned to Remote Meter Reading (RMR) and type tested to I-ETS 300 220. Any type of modulation may be used for data transmission. Analogue or digital speech is not permitted over the radio link.

This document covers narrow band equipment with channel spacings of less than or equal to 25 kHz and wide-band equipment with 50 or 200 kHz channel spacing. The band is based on 50 kHz channels, the centre frequencies determined by $183.5 + (0.05 \times n)$ where $n = 1$ to 19. Applications requiring a 200 kHz channel spacing would be assigned 4 consecutive 50 kHz channels. 50 kHz channels may be further subdivided if required.

2 DEFINITIONS

Consumer unit: Equipment for the transmission of data, connected to an endpoint device. The maximum erp for normal use shall be 100 mW. Where antennas are located outdoors and where they are fixed at height greater than 10 metres above ground level, the maximum erp should be restricted to 10 mW (see 3.1 below). The method of limiting erp is not specified but the maximum power output should be clearly indicated on the device and should not be modifiable in the field. Automatic Transmitter Power Control (ATPC) is permitted so long as the erp limit for the device is not exceeded. It is intended that the maximum "on-air" transmission time for a consumer unit shall not exceed 1% in any one hour period.

Node unit: Equipment used to (optionally) relay messages from either a consumer unit, or another node unit and to retransmit the information to another node unit or to a concentrator. The maximum erp shall be 100 mW, for transmitters less than 10 metres above ground level, and should be 10 mW (see 3.1 below) for all other transmitters. The method of limiting erp is not specified but the power output should be clearly indicated on the device and should not be modifiable in the field. The power levels and parameters of the transmitting and receiving parts not concerned with the 183,5 to 184,5 MHz band shall be subject to the regulations applicable to that part of the equipment.

Concentrator: Equipment used to initiate and collect data from consumer and node units. The concentrator shall have a maximum erp of 100 mW and should have a maximum transmitter height of 10 metres (see 3.1 below).

3 GENERAL

The operator shall require a Wireless Telegraphy Act licence to operate the system.

3.1 Transmitter height limitations

Where the licensee wishes to locate an outdoor 100 mW erp transmitter at a height greater than 10 metres above ground level, then they should notify the Agency of their intentions and include justification of the requirement. The RA reserves the right to prohibit the installation and use of 100 mW transmitters in locations where they may cause interference to other services.

3.2 Categories of equipment

The equipment for type testing shall be submitted under one of the following categories as illustrated in Figure 1:

Category 1	Consumer unit; a transmitter with a maximum effective radiated power of 100 mW, with or without a receiver.
Category 2	Node unit; a transmitter, with a maximum effective radiated power of 100 mW, with or without a receiver.
Category 3	Concentrator (Fixed, or Mobile); a transmitter, with a maximum effective radiated power of 100 mW, with or without a receiver.

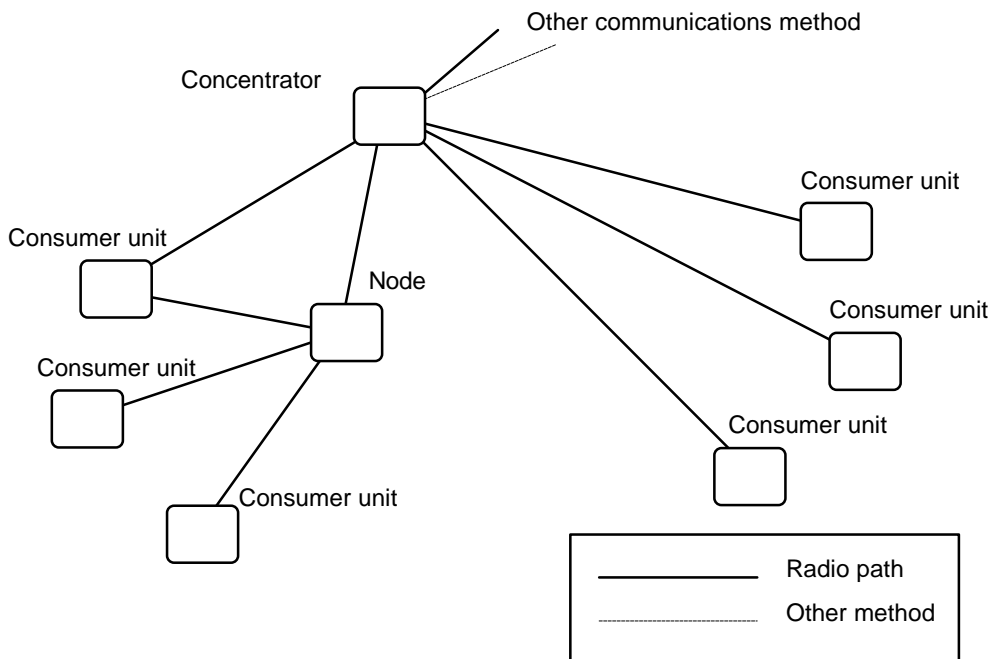


Figure 1 : Example system layout illustrating possible radio paths.

4 TECHNICAL PARAMETERS

Table 1: Technical parameters

Sub-Clause	Parameter	Comment	Limit	Method of measurement (I-ETS 300 220)
4.1	Frequency error	Category 2 and 3 equipment.	$\pm 1,5$ kHz for channel separation $\leq 12,5$ kHz, $\pm 2,0$ kHz for channel separation $\leq 25,0$ kHz	Sub-clause 7.1
4.2	Power	I-ETS 300 220 Classes 1, 2& 3	100 mW or 10 mW Class 1	Sub-clause 7.3
4.3	Permitted frequency band		All wanted transmissions to be contained within the permitted frequency band	
4.4	Adjacent channel power		Sub-clause 7.5.3 (I-ETS 300 220)	Sub-clause 7.5
4.5	Bandwidth		50 or 200 kHz	Sub-clause 7.6, for categories etc.
4.6	Modulation	Analogue or digital speech is not permitted	Any type of modulation is permitted provided sub-clauses 3.4 and 3.5 are met.	
4.7	Extreme temperature range		-25 to +55°C	
4.8	Spurious emissions:			
	Transmitter		Sub-clause 7.7.5 Table 10	Sub-clause 7.7
	Receiver		Sub-clause 8.1.5	Sub-clause 8.1
4.9	Transients	The applicant to declare which is applicable.	When switched to or from the operating mode, the transmitter shall be at the nominal operating frequency either; a) when the radiated carrier is > 250 nW, or; b) within 10 ms of switch on.	