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Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communications (DSRC); Part 3-1: Technical characteristics and test methods for High Data Rate (HDR) data transmission equipment operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Intelligent Transport System (ITS), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 3 of a multi-part deliverable covering the Road Transport and Traffic Telematics (RTTT), as identified below:

Part 1: General characteristics and test methods for Road Side Units (RSU) and On-Board Units (OBU);

Part 2: Harmonized EN under article 3.2 of the R&TTE Directive;

Part 3-1: Technical characteristics and test methods for High Data Rate (HDR) data transmission equipment operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band.

Proposed national transposition dates	
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Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Introduction

The present document was drafted on the assumption that type test measurements, performed in an accredited test laboratory, will be accepted by the various national regulatory authorities in order to grant type approval, provided the national regulatory requirements are met. This is in compliance with CEPT/ERC Recommendation 70-03 [2].

The present document specifies the requirements for a dedicated 5,8 GHz short range microwave link intended for High Data Rate communication system for Road Transport and Traffic Telematics (RTTT) applications.

The present document supports the necessary transmitter and receiver High Data Rate (HDR) of up to 1 Mbit/s.

The RSU transmitter operates on a non-exclusive basis on frequencies depending on the declared application according to CEPT/ECC/DEC(02)01 [1].

A channel spacing of 10 MHz is used, see table 1.

Table 1: RTTT transmitter frequencies for 10 MHz channel spacing systems

	Initial road to Vehicle systems	Multi lane road junctions (options)
Channel 1	5 800 MHz	
Channel 2		5 810 MHz

In order to permit the greatest freedom of design of equipment, whilst protecting other radio services from interference, a balance is required between the permitted range of frequencies on which the equipment may be used, and its frequency stability and modulation characteristics. The present document specifies the operational frequencies and system bandwidths. However, the present document does not fully describe the permitted range of optional frequencies as these are covered by national regulations. The optional range of frequencies offered should be specified on each type approval certificate issued.

Clauses 1 to 3 give a general description of the types of equipment covered by the present document and the definitions and abbreviations used. Clause 4 gives general requirement in order that type tests may be carried out and any markings on the equipment to be provided by the manufacturer.

Clauses 5 and 6 specify the test conditions.

Clauses 7 and 8 specify the limits of the Physical Layer parameters which are required to be tested for the RSU transmitters and receivers. These limits have been chosen to minimize harmful interference to and from other equipment and services. These clauses also specify how the equipment is to be tested and the conditions which are applied.

Clause 9.1 specifies the limits of the Physical Layer parameters which are required to be tested for transponders. These limits are chosen to restrict the access to and radiation from transponders. Details on the test methods for the transponders are also specified.

Clause 12 specifies the maximum measurement uncertainty values.

Clause 10 specifies the parameters and protocol procedures for Layer 2 (Data Link Layer).

Clause 11 specifies the parameters and protocol procedures for Layer 7 (Application Layer).

Annex A provides specifications concerning test sites for radiated measurements.

Annex B provides descriptions of measurement methods for radiated measurements.

Annex C provides descriptions of alternative measurement methods for receivers.

Annex D provides the choices for parameters and protocol procedures to be tested for a system to be compliant to the European Electronic Tolling Service (EETS).

1 Scope

The present document specifies radio parameters, data link services and protocol data units, and application services and protocol data units which are necessary for the efficient use of the radio spectrum and for the purpose of DSRC based applications. This includes methods of measurements for verifying the limits stated in the present document.

The present document applies to 5,8 GHz Short Range Devices (SRDs) for use in Road Transport Traffic and Telematics (RTTT):

- with a Radio Frequency (RF) output connection and specified antenna or with an integral antenna;
- for data transmission only;
- operating on radio frequencies in the 5 725 MHz to 5 875 MHz Industrial, Scientific and Medical (ISM) band.

The applicability of the present document covers both the Road Side Units (RSUs) and the On Board Units (OBUs) with transceivers and transponders.

The present document does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable.

The present document complies with CEPT/ECC/DEC(02)01 [1] and CEPT/ERC Recommendation 70-03 [2]. It is a specific standard covering various RTTT applications. The RTTT data rate specified in the present document is:

- RTTT systems using down and up link data rate of up to 1 Mbit/s.

For non-harmonized parameters, national regulatory conditions may apply regarding the type of modulation, channel/frequency separation, maximum transmitter output power/effective radiated power, equipment marking as a condition of the issue of an individual or general license, or, as a condition of use under license exemption.

Additional standards or specifications may be required for equipment such as that intended for connection to the Public Switched Telephone Network (PSTN) or other systems.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] CEPT ECC/DEC(02)01: "ECC Decision of 15 March 2002 on the frequency bands to be designated for the coordinated introduction of Road Transport and Traffic Telematic Systems".

[2] CEPT ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".

[3] CISPR 16-1: "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus".

[4] ETSI TR 100 028 (all parts): " Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".