

**Road transport and traffic telematics -
Dedicated short-range communication -
Physical layer using microwave at 5,8
GHz**

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short-range communication - Physical layer using
microwave at 5,8 GHz

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12253:2004 sisaldab Euroopa standardi EN 12253:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 26.10.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12253:2004 consists of the English text of the European standard EN 12253:2004.</p> <p>This document is endorsed on 26.10.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>The DSRC Standards EN 12253, EN 12795 and EN 12834, which together form a three-layered architecture for DSRC, are designed to encompass a wide range of services for different purposes in order to make the basic DSRC architecture suited for many different applications and for a wide range of possible products and systems.</p>	<p>Scope:</p> <p>The DSRC Standards EN 12253, EN 12795 and EN 12834, which together form a three-layered architecture for DSRC, are designed to encompass a wide range of services for different purposes in order to make the basic DSRC architecture suited for many different applications and for a wide range of possible products and systems.</p>
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ICS 35.240.60

Võtmesõnad:

English version

**Road transport and traffic telematics - Dedicated short-range
communication - Physical layer using microwave at 5,8 GHz**

Télématique des transports routiers - Communication à
courte portée véhicule/infrastructure - Couche physique
utilisant les micro-ondes à 5,8 GHz

Straßentransport- und Verkehrstelematik (RTTT) -
Nahbereichskommunikation Fahrzeug-Base (DSRC) -
Bitübertragungsschicht für die Frequenz 5,8 GHz

This European Standard was approved by CEN on 23 April 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Contents

	page
Foreword.....	3
Introduction.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions.....	5
3.1 General definitions.....	5
3.2 Downlink parameters.....	6
3.3 Uplink parameters.....	8
4 Abbreviations.....	10
5 DSRC link parameters.....	11
5.1 General.....	11
5.2 Downlink parameters.....	11
5.3 Uplink parameters.....	14
Annex A (informative) A-deviations.....	16
Bibliography.....	17

Foreword

This document (EN 12253:2004) has been prepared by Technical Committee CEN/TC 278 "Road Transport and Traffic Telematics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

This document supersedes ENV 12253:1997

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This document replaces ENV 12253. In order to facilitate migration from European Pre-standard (ENV) to European Standard, equipment procured and installed in accordance with ENV 12253 has been considered when drafting this document.

This document forms part of a series of documents defining the framework of a Dedicated Short Range Communication (DSRC) link in the Road Transport and Traffic Telematics (RTTT) environment.

The communication requirements of many RTTT applications can be fulfilled by DSRC. The DSRC Standards enable compliant communication systems to serve multiple RTTT applications in parallel.

The small service areas and severe real-time constraints require a specific protocol architecture leading to the reduced protocol stack shown in Figure 1, consisting of the Application Layer, the Data Link Layer, and the Physical Layer. Such an architecture is very common for real-time environments.

This document deals with the physical layer of the DSRC protocol stack.

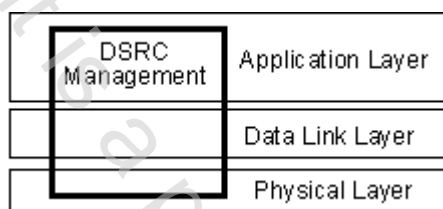


Figure 1 — DSRC protocol stack

The following set of documents for the DSRC link is issued by CEN:

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|----------|--|
| EN 12253 | <i>Road transport and traffic telematics - Dedicated short-range communication - Physical layer using microwave at 5,8 GHz</i> |
| EN 12795 | <i>Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC data link layer: medium access and logical link control</i> |
| EN 12834 | <i>Road transport and traffic telematics - Dedicated Short Range Communication (DSRC) - DSRC application layer</i> |
| EN 13372 | <i>Road transport and traffic telematics - Dedicated short-range communication - Profiles for RTTT applications</i> |

This document comprises requirements for Open Systems Interconnection (OSI) Layer 1 at 5,8 GHz for DSRC. It does not include associated measurement procedures for verification of the requirements. Test methods for conformity are provided in ETSI EN 300674-1, ETSI EN 300674-2-1, ETSI EN 300674-2-2.

This European Standard caters for on-board units based on transponder technologies. Furthermore, it allows for mixed time, frequency and space division multiple access approaches.

This European Standard is conceived for the 10 MHz part, i.e. 5,795 GHz to 5,805 GHz, of the ISM band at 5,8 GHz which is recommended by ECC/DEC(01)01. An additional sub-band (5,805 GHz - 5,815 GHz) may be allocated on a national basis for RTTT. National restrictions on the usage of these frequency bands may apply according to CEPT/ERC REC 70-03.

1 Scope

The DSRC Standards EN 12253, EN 12795 and EN 12834, which together form a three-layered architecture for DSRC, are designed to encompass a wide range of services for different purposes in order to make the basic DSRC architecture suited for many different applications and for a wide range of possible products and systems.

This document:

- specifies a physical layer at 5,8 GHz for DSRC as applicable in the field of Road Transport and Traffic Telematics (RTTT).
- provides requirements for the communication medium to be used for exchange of information between road-side units (RSU) and on-board units (OBU).
- caters for a communication means to be used by several applications in the RTTT sector.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ETSI EN 300674-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band; Part 1: General characteristics and test methods for Road Side Units (RSU) and On-Board Units (OBU)
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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General definitions

3.1.1

Adjacent channel

refers to the use of a neighbouring DSRC channel by two or more emissions

Note: It is possible that a DSRC channel has either one or two adjacent channels.

3.1.2

Antenna bore sight direction

direction of maximum antenna gain

3.1.3

Bit error ratio

averaged number of erroneous bits relative to the total number of transmitted bits

3.1.4

Channel

for DSRC, a channel is indicated by reference to the downlink centre frequency of one of up to four frequency bands with 5 MHz width each.