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Irish Standard
S.R. CEN/TR 16040:2010

Electronic fee collection - Requirements for urban dedicated short-range communication

S.R. CEN/TR 16040:2010

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NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
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English Version

Electronic fee collection - Requirements for urban dedicated short-range communication

Perception de Télépéage - Exigences pour l'usage du
DSRC en urbain

Elektronische Gebührenerfassung - Urbane Anforderungen
für die Kurzstreckenkommunikation

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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (CEN/TR 16040:2010) has been prepared by Technical Committee CEN/TC 278 "Road transport and traffic telematics", the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Introduction

Electronic Fee Collection (EFC) systems that use DSRC are normally implemented on inter-urban highways (motorways and expressways). Referring to the use of common DSRC installations and specifications for urban areas, therefore, pre-supposes that the way in which they are implemented will be similar, or can be made to be similar to the inter-urban highway environment.

However, urban areas can be very different and can be highly constraining. These constraints may affect the specification and implementation of DSRC EFC systems in these areas, such that there is a perceived need to be able to define DSRC requirements that are specific to the “urban” context.

Urban Road User Charging Schemes are likely to become much more common across Europe as a means of seeking to restrain traffic demand in order to reduce congestion and pollution in city centres. Hence, there is a need to ensure that charging point and equipment designs are specifically taking into account the urban context. The objective of this Technical Report is to analyse the particular requirements that the urban environment place on EFC systems.

This technical report includes a set of requirements for functionality, design and environmental issues. The mandatory EFC functions include some specific quality parameters linked to some of the functions. For the optional functions and for the design and environmental issues some typical and/or feasible quality parameters are given in Notes. It is foreseen that each Urban Charging Scheme defines its own set of quality parameters enabling a compliance checking of the urban charging system against the scheme requirements, e.g. the probability for a wrong classification. It should be noted that this Technical Report reflects the performance levels required by the EFC operators enabling them to handle high traffic volumes in urban areas in environments different from those defined or observed in EFC systems on motorways. The requirements are also technology independent and different technologies and different tolling schemes may have an impact on the final requirements defined for each urban tolling system.

It should also be noted that this technical report also includes some requirements that are not only related to urban charging but also to charging outside urban areas, e.g. on high speed and high volume charging points on motorways. This has been done to include issues and/or requirements that are important not only to urban charging but to EFC in general.

This technical report reflects the requirements of the EFC Service Providers and Toll Chargers for urban tolling systems.

1 Scope

This technical report analyses DSRC Urban Charge Point Requirements including the following issues:

- The core requirements and functionality that must be provided within DSRC equipment in an urban context;
- The potential aesthetic impact;
- How to handle the different traffic conditions in urban areas;
- Accommodation of the diversity of road users;
- The potential need to address highly variable topology;
- A wide variety of installation challenges;
- Minimisation of the impact of E-M interference;
- How to ensure interoperability with systems in non-urban contexts (e.g. motorways, plaza systems, handheld readers, etc);
- How to minimise and, if possible, have no impact upon OBE design;
- Relations to other existing standards in this domain;
- How to meet international requirements for Health and Safety;
- The wider policy context that city centres must address in addition to tackling congestion.

The physical location and configuration of the installation represent a compromise between the needs of the DSRC transaction, of the local electromagnetic environment and of the existing built environment locally both above and below ground. The urban charging system, of which the DSRC element is a part, will be required to fit within a wider social and transport policy context.

It is recognised that not all the elements above lend themselves to a standard, nor will industry be interested in promoting all above topics. However, with an increasing number of urban Charging Schemes being considered, there is a need to create relevant standards from the above lists and hence make it easier for suppliers to offer equipment and services to meet the requirements.

2 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.

EN 12253, *Road transport and traffic telematics — Dedicated short-range communication — Physical layer using microwave at 5,8 GHz*

EN 12795, *Road transport and traffic telematics — Dedicated Short Range Communication (DSRC) — DSRC data link layer: medium access and logical link control*

EN 12834, *Road transport and traffic telematics — Dedicated Short Range Communication (DSRC) — DSRC application layer*

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