

Australian Standard™

**Road transport and traffic telematics—
Electronic fee collection—Application
interface definition for dedicated short-
range communication**

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PREFACE

This Standard was prepared by the Standards Australia Committee IT-023, Transport Information and Control Systems.

This Standard is identical with, and has been reproduced from ISO 14906:2004, *Road transport and traffic telematics—Electronic fee collection—Application interface definition for dedicated short-range communication*.

The objective of this Standard is to provide Australian toll operators with tools for electronic fee collection to reach interoperability between operators.

The terms ‘normative’ and ‘informative’ are used to define the application of the annexes to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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7812 Identification cards—Identification of issuers	3523 Identification cards—Identification of issuers
7812-1 Part 1: Numbering system	3523.1 Part 1: Numbering system
ISO	
3166 Codes for representation of names of countries and their subdivisions	2632 Codes for representation of names of countries and their subdivisions
3166-1 Part 1: Country codes	2632.1 Part 1: Country codes
3779 Road vehicles—Vehicle identification number (VIN)—Content and structure	MP 55 Vehicle identification number (VIN) codes
4217 Codes for the representation of currencies and funds	3759 Codes for the representation of currencies and funds
ISO/IEC	AS/NZS
8824 Information technology—Abstract Syntax Notation One (ASN.1)	8824 Information technology—Abstract syntax notation one
8824-1 Part 1: Specification of basic notation	8824.1 Part 1: Specification of basic notation
8825 Information technology—ASN.1 encoding rules	8825 Information technology—ASN.1 encoding rules
8825-2 Part 2: Specification of Packed Encoding Rules (PER)	8825.2 Part 2: Specification of packed encoding rules

Only international references that have been adopted as Australian Standards have been listed.

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INTRODUCTION

This document specifies an application interface for Electronic Fee Collection (EFC) systems, which are based on the Dedicated Short-Range Communication (DSRC). It supports interoperability between EFC systems on an EFC-DSRC application interface level.

This document provides specifications for the EFC transaction model, EFC data elements (referred to as attributes) and functions, from which an EFC transaction can be built. The EFC transaction model provides a mechanism that allows handling of different versions of EFC transactions and associated contracts. A certain EFC transaction supports a certain set of EFC attributes and EFC functions as defined in this European Standard. It is not envisaged that the complete set of EFC attributes and functions is present in each piece of EFC equipment, be on-board equipment (OBE) or roadside equipment (RSE).

This document provides the basis for agreements between operators, which are needed to achieve interoperability. Based on the tools specified in this document, interoperability can be reached by operators recognising each others EFC transactions (including the exchange of security algorithms and keys) and implementing the EFC transactions in each others RSE, or they may reach an agreement to define a new transaction (and contract) that is common to both. Considerations should also be made by each operator that the RSE has sufficient resources to implement such additional EFC transactions.

In order to achieve interoperability, operators should agree on issues like:

- which optional features are actually being implemented and used;
- access rights and ownership of EFC application data in the OPE;
- security policy (including encryption algorithms and key management, if applicable);
- operational issues, such as how many receipts may be stored, or privacy reasons, how many receipts are necessary for operational reasons (e.g. as entry tickets or as proof of payment);
- the agreements needed between operators in order to regulate the handling of different EFC transactions.

This document has the following structure. In the first four clauses the scope, normative references, definitions of terms and abbreviations are accounted for. Next, in Clause 5, the EFC Application interface architecture is described in terms of its relation to the DSRC communication architecture, including the addressing of data attributes and of components. In the following Clause 6, the EFC transaction model is introduced, defining the common steps of each EFC transaction, in particular the initialisation phase. Clauses 7 and 8 are dedicated to the detailed specification of the EFC application functions and of the EFC data attributes, respectively. Four annexes provide:

1. Annex A: the normative Annex 1 specifications of the used data types (EFC action parameters and attributes);
2. Annex B: an informative example of a transaction based on the CARDME specification, including bit-level specification;
3. Annex C: informative examples of EFC transaction types, using the specified EFC functions and attributes;
4. Annex D: an informative listing of functional requirements, which can be satisfied by using the tools provided by this document.

AUSTRALIAN STANDARD

Road transport and traffic telematics— Electronic fee collection—Application interface definition for dedicated short-range communication

1 Scope

This document specifies the application interface in the context of Electronic Fee Collection (EFC) systems using the Dedicated Short-Range Communication (DSRC).

The EFC application interface is the EFC application process interface to the DSRC Application Layer, as can be seen in Figure 1 below. The scope of this document comprises specifications of:

- EFC attributes (i.e. EFC application information);
- the addressing procedures of EFC attributes and (hardware) components (e.g. ICC and MMI);
- EFC application functions, i.e. further qualification of actions by definition of the concerned services, assignment of associated ActionType values and content and meaning of action parameters;
- the EFC transaction model, which defines the common elements and steps of any EFC transaction;
- the behaviour of the interface so as to ensure interoperability on an EFC-DSRC application interface level.

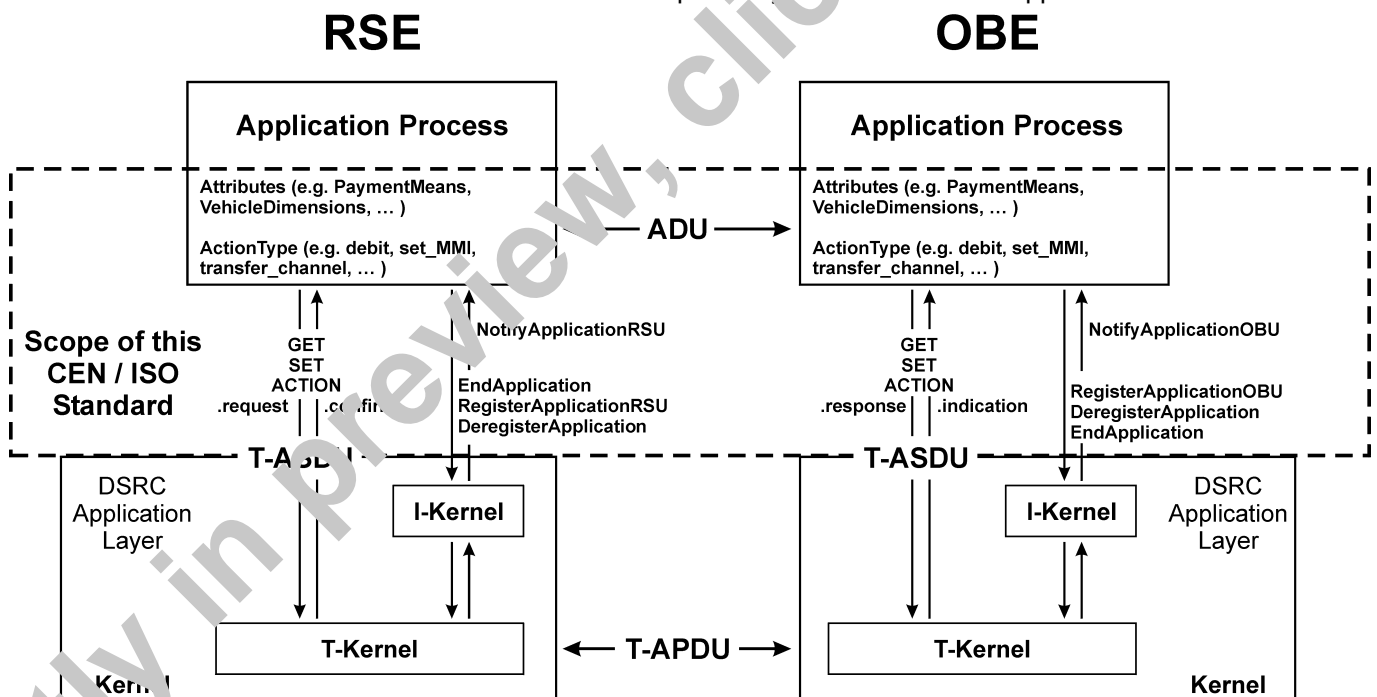


Figure 1 — The EFC application interface

This is an interface standard, adhering to the open systems interconnection (OSI) philosophy (ISO/IEC 7498-1), and it is as such not concerned with the implementation choices to be realised at either side of the interface.

This document provides security-specific functionality as place holders (data and functions) to enable the implementation of secure EFC transactions. Yet the specification of the security policy (including specific security algorithms and key management) remains at the discretion and under the control of the EFC operator, and hence is outside the scope of this document.