
**Electronic fee collection —
Compliance check communication for
autonomous systems**

*Perception de télépéage — Communication de contrôle de conformité
pour systèmes autonomes*

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

This second edition cancels and replaces the first edition (ISO 12813:2015), which has been technically revised. It also incorporates the Amendment ISO 12813:2015/Amd 1:2017.

The main changes compared to the previous edition are as follows:

- inclusion of the changes of ISO 12813:2015/Amd 1:2017(E), i.e. it defines the electronic fee collection compliance check communication using the WAVE communication stack as defined in IEEE;
- reverting the length of attribute GnssStatus back to 23 octets and removing the data element of type Altitude;
- allowing a maximum of two instances of AID = 20 in the ApplicationList in the VST;
- adding values goSuspicion (5) and noGoPaymentMeans (4) to the data element statusIndicator as well as updating and clarifying the semantic definitions of all statuses and when they change;
- updating the OBESatusHistory - timeWhenChanged and ExtendedOBESatusHistory -timeWhenChanged/timeWhenChangedToPrevious based on the updated semantic definition of statusIndicator;
- clarifying the relationship between the LLLL element in VehicleClass and the LocalVehicleClassId (imported from ISO 17575-3);
- clarifying that ExtendedOBESatusHistory - timeWhenChangedToPrevious shall be set to zero in case no previous value is available;
- clarifying that VehicleWeightHistory - timeWhenChangedToCurrentValue changes not only due to changes in the attribute VehicleCurrentMaxTrainWeight but also changes in the assignment of the LocalVehicleClassId or the LLL element within VehicleClass;

- adding the EFC attributes ExtendedOBUSStatusHistoryPart1, ExtendedOBUSStatusHistoryPart2 and UserConfirmation;
- updating [Annex C](#) by adding the attributes VehicleCurrentMaxTrainWeight and AttributeUpdateInterval to the information in virtual memory according to ETSI ES 200 674-1 communication stack usage for CCC applications.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

On-board equipment (OBE) that uses satellite-based positioning technology to collect data required for charging for the use of roads operates in an autonomous way (i.e. without relying on dedicated roadside infrastructure). The OBE will record the amount of road usage in all toll charging systems it passes through.

This document defines requirements for dedicated short-range communication (DSRC) between OBE and an interrogator for the purpose of checking compliance of road use with a local toll regime. It assumes an electronic fee collection (EFC) services architecture according to ISO 17573-1. See [Figure 1](#).

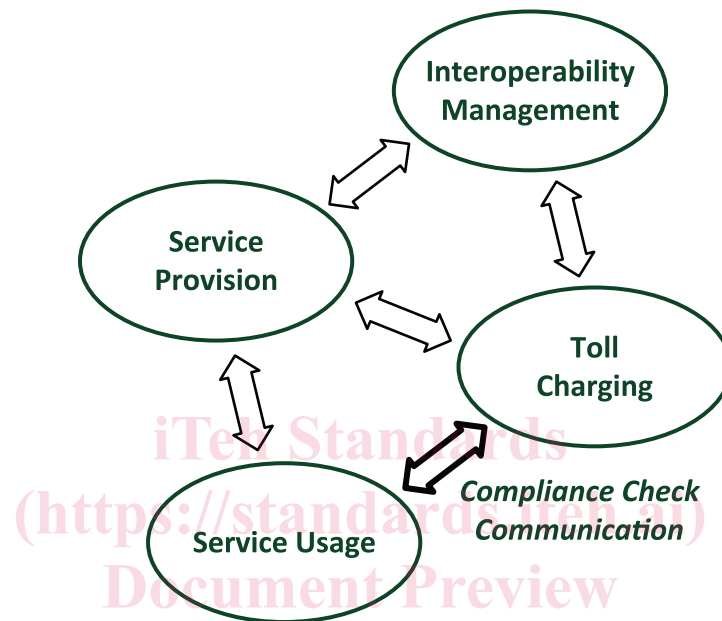


Figure 1 — Compliance check communication in EFC architecture according to ISO 17573-1

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Toll chargers have the need to check whether the road is used in compliance with the rules in the local toll regime. One way of checking compliance is to observe a passing vehicle and to interrogate the OBE. This interrogation happens under control of an entity responsible for toll charging (see [Figure 1](#)), accomplished via short-range communication between an interrogator at roadside or in another vehicle (operated by a competent enforcement agency) and the OBE. In an interoperable environment, it is essential that this interrogation communication be standardized such that every operator of compliance checking equipment can check all passing OBE. For that purpose, this document defines attributes required on all OBE for reading by an interrogator.

This document has been prepared to fulfil the following statements:

- Collected evidence can be used as court proof. Data is indisputable and secured such that the operator of the compliance checking interrogator can prove the integrity and authenticity of the data in case of dispute.
- The data required for compliance checking is read only, since the operator of the interrogator does not interfere with the working of the OBE.
- All attributes, standardised at the time of personalisation of the OBE, are present in the OBE such that an operator of an interrogator essentially can read the same data from all OBE independent of type and make. In case an attribute does not make sense in a certain OBE implementation, a value assignment for “not applicable” or “not defined” is provided in each case. An OBE compliant to the first edition will not answer with such a response for new attributes introduced in the current edition of this document.