
**Intelligent transport systems —
Framework for cooperative telematics
applications for regulated commercial
freight vehicles (TARV) —**

**Part 9:
Remote digital tachograph monitoring**

*Systèmes intelligents de transport — Cadre pour applications
télématiques coopératives pour véhicules de fret commercial
réglementé (TARV) —*

Partie 9: Monitoring du tachygraphe électronique à distance (RTM)



This document is a preview generated by EKO



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 Symbols and abbreviated terms	7
5 Conformance	8
6 General overview and framework requirements	8
6.1 General.....	8
6.2 Overview of Communication Profile C1 — Remote roadside inspection using a short-range wireless communication interrogator instigating a physical roadside inspection.....	9
6.2.1 General overview of Communication Profile C1.....	9
6.3 Overview of Communication Profile C2 — Roadside inspection using a short-range wireless communication interrogator, instigating a download of data to an application service provider.....	11
6.3.1 General overview of Communication Profile C2.....	11
6.4 Overview of Communication Profile C3 — Remote inspection addressed via an ITS-station instigating a download of data to an application service provider via a wireless communications interface (as defined in ISO 15638-2).....	12
6.4.1 General overview of Communication Profile C3.....	12
6.5 Communications requirements.....	13
6.5.1 General communications requirements.....	13
6.5.2 Communications profile C1 requirements.....	13
6.5.3 Communications profile C2 requirements.....	14
6.5.4 Communications profile C3 requirements.....	14
7 Requirements for services using generic vehicle data	14
8 Application services that require data in addition to basic vehicle data	14
8.1 General.....	14
8.2 Quality of service requirements.....	15
8.3 Test requirements.....	15
8.4 Marking, labelling and packaging.....	15
9 Common features of regulated TARV application services	15
9.1 General.....	15
9.1.1 Communication Profiles C1 and C2.....	15
9.1.2 Communication Profile C3.....	16
9.2 Common role of the jurisdiction, approval authority, service provider and user.....	18
9.3 Common characteristics for instantiations of regulated application services.....	18
9.4 Common sequence of operations for regulated application services.....	18
9.4.1 General.....	18
9.4.2 Quality of service.....	18
9.5 Information security.....	18
9.6 Data naming content and quality.....	19
9.7 Software engineering quality systems.....	19
9.8 Quality monitoring station.....	19
9.9 Audits.....	19
9.10 Data access control policy.....	19
9.11 Approval of IVSs and service providers.....	20
10 Remote tachograph monitoring (RTM)	20
10.1 TARV RTM service description and scope.....	20

10.1.1	Generic TARV RTM use case via the application service provider	20
10.1.2	Specific use case of tachograph inspection by an inspector of the jurisdiction using short range equipment (Communication profiles C1 and C2)	21
10.1.3	Description of TARV RTM regulated application service	21
10.1.4	Description of TARV RTM application service	23
10.2	Concept of operations for TARV RTM	23
10.2.1	General	23
10.2.2	Statement of the goals and objectives of the TARV RTM system	23
10.2.3	Strategies, tactics, policies, and constraints affecting the TARV RTM system	24
10.2.4	Organizations, activities, and interactions among participants and stakeholders of TARV RTM	24
10.2.5	Clear statement of responsibilities and authorities delegated for TARV RTM	25
10.2.6	Equipment required for TARV RTM	27
10.2.7	Operational processes for the TARV RTM system	28
10.2.8	Role of the jurisdiction for TARV RTM	28
10.2.9	Role of the TARV RTM prime service provider	28
10.2.10	Role of the TARV RTM application service provider	28
10.2.11	Role of the TARV RTM user	28
10.2.12	Generic characteristics for all instantiations of the TARV remote tachograph monitoring (RTM) application service	29
10.3	Sequence of operations for TARV RTM	29
10.3.1	General	29
10.4	TARV RTM service elements	31
10.4.1	TARV RTM service element (SE) 1 — Establish 'Remote tachograph monitoring' regulations, requirements, and approval arrangements	31
10.4.2	TARV RTM SE2 — Request system approval	31
10.4.3	TARV RTM SE3 — User (operator) contracts with prime service provider	31
10.4.4	TARV RTM SE4 — User (operator) equips vehicle with a digital tachograph	31
10.4.5	TARV RTM SE5 — User contracts with application service provider	31
10.4.6	TARV RTM SE6 — Application service provider uploads software into the TARV equipped vehicles of the operator	31
10.4.7	TARV RTM SE7 — Create data	32
10.4.8	TARV RTM SE8 — Recording of digital tachograph data	32
10.4.9	TARV RTM SE10 — 'Interrogated' request for tachograph data	32
10.4.10	TARV RTM SE9 — Pre-programmed interval sending digital tachograph data to application service provider (Communication profile C3)	34
10.4.11	TARV RTM SE11: End of session	35
10.5	Generic TARV RTM data naming, content and quality	35
10.6	RTM data content	35
10.7	TARV RTM application service specific provisions for quality of service	35
10.8	TARV RTM application service specific provisions for test requirements	36
10.9	TARV RTM application specific rules for the approval of IVSs and 'Service Providers'	36
	Annex A (informative) RTM Communication and Transaction profiles	37
	Annex B (informative) Communication Profile for EN 5,8 GHz DSRC communications	44
	Annex C (informative) Data 'Profiles' for 'Remote Tachograph Monitoring'	86
	Bibliography	97

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 first edition of ISO 15638-9 cancels and replaces ISO/TS 15638-9:2013, which has been technically revised. The main changes compared to the previous edition are as follows:

— Inclusion of remote inspection using short-range wireless interrogator for enforcement inspection purposes.

A list of all parts in the ISO 15638 series can be found on the ISO website.

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.

Introduction

Many ITS technologies have been embraced by commercial transport operators and freight owners in the areas of fleet management, safety and security. On-board applications have also been developed for governmental use. Such regulatory services in use or being considered vary from jurisdiction to jurisdiction, but include electronic on-board recorders, digital tachograph, on-board mass monitoring, 'mass' data for regulatory control and management, weigh-in-motion, vehicle access methods, hazardous goods tracking and eCall. Additional applications with a regulatory impact being developed include fatigue management, speed monitoring and vehicle penalties imposed based on location, distance and time.

In such an emerging environment of regulatory and commercial applications, it is timely to consider an overall architecture (business and functional) that could support these functions from a single platform within a commercial freight vehicle that operates within such regulations. International Standards will allow for a speedy development and specification of new applications that build upon the functionality of a generic specification platform. A series of standards deliverables is required to describe and define the framework and requirements so that the on-board equipment and back office systems can be commercially designed in an open market to meet common requirements of jurisdictions.

The ISO 15638 TARV series addresses and defines the framework for a range of cooperative telematics applications for regulated vehicles (e.g. access methods, driver fatigue management, speed monitoring, on-board mass monitoring, Remote Tachograph Monitoring, ADR management). The overall scope includes the concept of operation, legal and regulatory issues, and the generic cooperative provision of services to regulated vehicles, using an on-board ITS platform. The framework is based on a (multiple) service provider-oriented approach with provisions for the approval and auditing of service providers.

The ISO 15638 series provides both the means to achieve current requirements for telematics applications for regulated vehicles and the basis for future development of cooperative telematics applications for regulated vehicles.

The ISO 15638 series is timely, as many governments (Europe, North America, Asia and Australia/New Zealand) are considering the use of telematics for a range of regulatory purposes.

This document provides specifications for weigh-in-motion and on-board weighing monitoring and supports several defined communication profiles in which this function may be performed.

NOTE 1 The definition of what comprises a 'regulated' vehicle is regarded as an issue for national decision and can vary from jurisdiction to jurisdiction. This series does not impose any requirements on nations in respect of how they define a regulated vehicle.

NOTE 2 The definition of what comprises a 'regulated' service is regarded as an issue for national decision and can vary from jurisdiction to jurisdiction. This series does not impose any requirements on nations in respect of which services for regulated vehicles jurisdictions they will require, or support as an option, but will provide standardized sets of requirements descriptions for identified services to enable consistent and cost-efficient implementations where implemented.

Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) —

Part 9: Remote digital tachograph monitoring

1 Scope

This document addresses the provision of 'Remote Digital Tachograph Monitoring' and specifies the form and content of the transmission of such data required to support such systems, and access methods to that data.

This document provides specifications for common communications and data exchange aspects of the application service remote digital tachograph monitoring that a jurisdiction regulator can elect to require or support as an option, including:

- a) High level definition of the service that a service provider provides. The service definition describes common service elements but does not define the detail of how such an application service is instantiated, nor the acceptable value ranges of the data concepts defined.
- b) Means to realize the service.
- c) Application data naming, content and quality that an IVS delivers, including a number of profiles for data (noting that requirements and constraints of what can/cannot be transmitted over the air can vary between jurisdictions).
- d) Support for a number of defined communication profiles to enable remote inspection.

This document is not applicable for analogue tachograph equipment/systems.

This document provides specifications for the following communication profiles:

— **Communication Profile C1: Roadside inspection using a short-range wireless communication interrogator instigating a physical roadside inspection (master<>slave)**

Profile C1a: via a hand aimed or temporary roadside mounted and aimed interrogator

Profile C1b: via a vehicle mounted and directed interrogator

Profile C1c: via a permanent or semi-permanent roadside or overhead gantry

— **Communication Profile C2: Roadside inspection using a short-range wireless communication interrogator instigating a download of data to an application service provider via an ITS-station communication (master<>slave + peer<>peer)**

Profile C2a: via a hand aimed or temporary roadside mounted and aimed interrogator

Profile C2b: via a vehicle mounted and directed interrogator

Profile C2c: via a permanent or semi-permanent roadside or overhead gantry

— **Communication Profile C3: Remote inspection addressed via an ITS-station instigating a download of data to an application service provider via a wireless communications interface (as defined in ISO 15638-2).**

It is possible that subsequent versions of this document will support additional communication profiles.

NOTE 1 The definition of what comprises a 'regulated' service is regarded as an issue for national decision and can vary from jurisdiction to jurisdiction. This document does not impose any requirements on nations in respect of which services for regulated vehicles jurisdictions will require, or support as an option, but provides standardized sets of requirements descriptions for identified services to enable consistent and cost-efficient implementations where instantiated.

NOTE 2 The ISO 15638 series has been developed for use in the context of regulated commercial freight vehicles (hereinafter referred to as 'regulated vehicles'). However, there is nothing to prevent a jurisdiction from extending or adapting the scope to include other types of regulated vehicles, as it deems appropriate.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 14906, *Electronic fee collection — Application interface definition for dedicated short-range communication*

ISO 15638-1, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 1: Framework and architecture*

ISO 15638-2, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 2: Common platform parameters using CALM*

ISO 15638-3, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 3: Operating requirements, 'Approval Authority' procedures, and enforcement provisions for the providers of regulated services*

ISO/TS 15638-4, *Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — Part 4: System security requirements*

ISO 15638-5:2013, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 5: Generic vehicle information*

ISO 15638-6:2014, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 6: Regulated applications*

ERC 70-03, *ERC RECOMMENDATION 70-03 Relating To The Use Of Short Range Devices (Srd)*

ETSI EN 300-674-1, V1.2.1:2004-08, *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 (Interrogator) and On-Board Units (OBU)*

ETSI ES 200-674-1, V2.2.1:2011-02, *Intelligent Transport Systems (ITS); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC); Part 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*

ETSI TS 102-792, V1.2.1:2015-06, *Intelligent Transport Systems (ITS); Mitigation techniques to avoid interference between European CEN Dedicated Short Rang Communication (CEN DSRC) equipment and Inteligent Transport Systems (ITS) operating in the 5 GHz frequency range*

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*

EN 13372, *Road transport and traffic telematics (RTTT) — Dedicated short-range communication — Profiles for RTTT applications*

ARIB STD-T75, *Dedicated Short-Range Communication*

TTAS KO-06.0025, Standard of *DSRC* Radio Communication between Road-side Equipment and On-board Equipment in 5,8GHz band

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15638-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

app

small (usually) *Java*^{TM1)} (3.21) applets, organized as software bundles, that support *application services* (3.2) by keeping the *data pantry* (3.14) provisioned with up to date data

3.2

application service

service provided by a *service provider* (3.32) enabled by accessing data from the *IVS* (3.18) of a *regulated vehicle* (3.30) via a wireless communications network

3.3

application service provider

ASP

party that provides an *application service* (3.2)

3.4

app library

separately secure area of memory in *IVS* (3.18) where apps are stored with different access controls to *data pantry* (3.14)

3.5

approval

formal affirmation that an applicant has satisfied all the requirements for appointment as an *application service provider* (3.3) or that an application service delivers the required service levels

3.6

approval agreement

written agreement made between an *approval authority (regulatory)* (3.7) and a *service provider* (3.32)

Note 1 to entry: An *approval authority (regulatory)* (3.7) approval agreement recognizes the fact that a *service provider* (3.32), having satisfied the *approval authority's* requirements for appointment as a *service provider*, is appointed in that capacity, and sets out the legal obligations of the parties with respect to the on-going role of the *service provider*.

1) *Java*TM is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.