

# ISO 15638-9:2020 (E)

## Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — Part 9: Remote digital tachograph monitoring

---

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols and abbreviated terms
5	Conformance
6	General overview and framework requirements
6.1	General
6.2	Overview of Communication Profile C1 — Remote roadside inspection using a short-range wireless communication interrogator instigating a physical roadside inspection
6.2.1	General overview of Communication Profile C1
6.2.1.1	Profile C1a — Via a hand aimed or temporary roadside mounted and aimed interrogator
6.2.1.2	Profile C1b — Via a vehicle mounted and directed interrogator
6.2.1.3	Profile C1c — Via a permanent or semi-permanent roadside or overhead gantry
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
6.3.1	General overview of Communication Profile C2
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)
6.4.1	General overview of Communication Profile C3
6.5	Communications requirements
6.5.1	General communications requirements
6.5.2	Communications profile C1 requirements
6.5.3	Communications profile C2 requirements
6.5.4	Communications profile C3 requirements
7	Requirements for services using generic vehicle data
8	Application services that require data in addition to basic vehicle data
8.1	General
8.2	Quality of service requirements
8.3	Test requirements
8.4	Marking, labelling and packaging
9	Common features of regulated TARV application services
9.1	General
9.1.1	Communication Profiles C1 and C2
9.1.2	Communication Profile C3
9.2	Common role of the jurisdiction, approval authority, service provider and user
9.3	Common characteristics for instantiations of regulated application services
9.4	Common sequence of operations for regulated application services
9.4.1	General

- 9.4.2 Quality of service
  - 9.5 Information security
  - 9.6 Data naming content and quality
  - 9.7 Software engineering quality systems
  - 9.8 Quality monitoring station
  - 9.9 Audits
  - 9.10 Data access control policy
  - 9.11 Approval of IVSs and service providers
- 10 Remote tachograph monitoring (RTM)
- 10.1 TARV RTM service description and scope
    - 10.1.1 Generic TARV RTM use case via the application service provider
    - 10.1.2 Specific use case of tachograph inspection by an inspector of the jurisdiction using short range equipment (Communication profiles C1 and C2)
      - 10.1.3 Description of TARV RTM regulated application service
      - 10.1.4 Description of TARV RTM application service
  - 10.2 Concept of operations for TARV RTM
    - 10.2.1 General
      - 10.2.2 Statement of the goals and objectives of the TARV RTM system
      - 10.2.3 Strategies, tactics, policies, and constraints affecting the TARV RTM system
      - 10.2.4 Organizations, activities, and interactions among participants and stakeholders of TARV RTM
        - 10.2.5 Clear statement of responsibilities and authorities delegated for TARV RTM
        - 10.2.6 Equipment required for TARV RTM
          - 10.2.6.1 TARV IVS
          - 10.2.6.2 TARV RTM 'app'
          - 10.2.6.3 Tachograph
        - 10.2.7 Operational processes for the TARV RTM system
        - 10.2.8 Role of the jurisdiction for TARV RTM
        - 10.2.9 Role of the TARV RTM prime service provider
          - 10.2.10 Role of the TARV RTM application service provider
          - 10.2.11 Role of the TARV RTM user
        - 10.2.12 Generic characteristics for all instantiations of the TARV remote tachograph monitoring (RTM) application service
  - 10.3 Sequence of operations for TARV RTM
    - 10.3.1 General
  - 10.4 TARV RTM service elements
    - 10.4.1 TARV RTM service element (SE) 1 — Establish 'Remote tachograph monitoring' regulations, requirements, and approval arrangements
      - 10.4.2 TARV RTM SE2 — Request system approval
      - 10.4.3 TARV RTM SE3 — User (operator) contracts with prime service provider
      - 10.4.4 TARV RTM SE4 — User (operator) equips vehicle with a digital tachograph
      - 10.4.5 TARV RTM SE5 — User contracts with application service provider
      - 10.4.6 TARV RTM SE6 — Application service provider uploads software into the TARV equipped vehicles of the operator
      - 10.4.7 TARV RTM SE7 — Create data
      - 10.4.8 TARV RTM SE8 — Recording of digital tachograph data
      - 10.4.9 TARV RTM SE10 — 'Interrogated' request for tachograph data
        - 10.4.9.1 Communication Profile C1 (Via Short range mobile interrogator)
        - 10.4.9.2 Communication Profile C2 (Via Short range mobile interrogator/ISO 15638-2 provision of data)
          - 10.4.9.3 Communication Profile C3 (via ISO 15638-2 ITS-station provision of data)
      - 10.4.10 TARV RTM SE9 — Pre-programmed interval sending digital tachograph data to application service provider (Communication profile C3)
      - 10.4.11 TARV RTM SE11: End of session
  - 10.5 Generic TARV RTM data naming, content and quality
  - 10.6 RTM data content
  - 10.7 TARV RTM application service specific provisions for quality of service
  - 10.8 TARV RTM application service specific provisions for test requirements
  - 10.9 TARV RTM application service specific rules for the approval of IVSs and 'Service Providers'
- Annex A (informative) RTM Communication and Transaction profiles
- A.1 Communication Profile C1 — Interrogated request for tachograph data using short range 5,8 GHz DSRC communication

- A.2 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
- A.3 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
  - A.3.1 Interrogated request for tachograph data via ITS-station
  - A.3.2 Obtaining tachograph data by remotely addressing the IPv6/IPv4 address of a vehicle ITS-station or its tachograph that is wirelessly connected in accordance with one or more of the wireless media specified in ISO 15638-2
  - A.3.3 Obtaining tachograph data by interrogating via a fixed gantry or roadside beacon is wirelessly connected in accordance with one or more of the wireless media specified in ISO 15638-2
  - A.3.4 Obtaining tachograph data by interrogating via a mobile interrogator that is wirelessly connected in accordance with one or more of the wireless media specified in ISO 15638-2 (Communication profile C3)
- A.4 Pre-programmed downloads of tachograph data (Communication profile C3)
  - A.4.1 Pre-programmed interval sending digital tachograph data to application service provider
- A.5 End of session

**Annex B (informative) Communication Profile for EN 5,8 GHz DSRC communications**

- B.1 Overview and context
  - B.1.1 Overview
  - B.1.2 Use cases
  - B.1.3 Physical layer
  - B.1.4 Profile C1 transactions
  - B.1.5 Communications Profile C1 transactions operating within EN 12253, 5,8 GHz DSRC and the profile definitions of EN 12834
    - B.1.5.1 5,8 GHz European DSRC downlink and uplink parameters
    - B.1.5.2 ASN.1 module for the RtmData transaction
  - B.1.6 Operating context
    - B.1.6.1 Prerequisites
    - B.1.6.2 Location constraints
    - B.1.6.3 Frames
    - B.1.6.4 Information security
    - B.1.6.5 RTM LPDU
    - B.1.6.6 Equipment design
    - B.1.6.7 Interrogator form factor
    - B.1.6.8 IVS form factor
    - B.1.6.9 Interrogator antenna form factor
    - B.1.6.10 IVS antenna form factor
    - B.1.6.11 IVS antenna position
  - B.1.7 Data download protocol
    - B.1.7.1 Overview
    - B.1.7.2 Automatically repeating interrogations
    - B.1.7.3 RTM operating in a multi-service environment
    - B.1.7.4 Commands
  - B.1.8 Data structures
  - B.1.9 Interaction process
    - B.1.9.1 Window management
      - B.1.9.1.1 General
      - B.1.9.1.2 Example of frame exchange
      - B.1.9.1.3 State machine
        - B.1.9.1.3.1 MA-DATA.request
        - B.1.9.1.3.2 MA-DATA.indication
    - B.1.9.2 Behaviour of the IVS
    - B.1.9.3 State transitions
- B.2 5,8 GHz DSRC Functions for RTM
  - B.2.1 Functions in detail
    - B.2.1.1 General
    - B.2.1.2 Security and encryption
    - B.2.1.3 Creating and maintaining data
    - B.2.1.4 Initialise communication

- B.2.1.5 Data transfer mechanism
- B.2.1.6 Detailed DSRC transaction description
- B.3 DSRC test transaction description
- B.4 Error handling
- B.4.1 Recording of the data in the IVS
- B.4.2 Communication errors
- B.4.3 Encryption and signature errors
- B.4.4 Recording of errors
- B.4.4.1 Dynamic wireless communication
- B.4.4.2 Recommendation to use digital imaging in support of DSRC
- B.4.4.3 Failure to read
- B.5 Commissioning and periodic inspection tests for the DSRC
- B.5.1 General
- B.5.2 Tests which validate data content
- B.5.3 ECHO

**Annex C (informative) Data ‘Profiles’ for ‘Remote Tachograph Monitoring’**

- C.1 Data profile DP15638-9-1 — General locally specified RTM transaction
- C.1.1 Generic RTMdata transaction
- C.2 Generic TARV RTM data naming, content and quality
- C.3 Data profile DP15638-9-2 — EU 165-2014 (tachographs in road transport) Remote interrogation data concept — Remote early detection of possible manipulation or misuse
- C.3.1 General
- C.3.2 Payload data definition
- C.3.2.1 General
- C.3.2.2 Payload structured record
- C.3.2.3 EU 165-2014 VU payload data
- C.4 Data profile DP15638-9-3:
- C.5 Profile 15638-9-4: (May be added in a later edition)
- C.6 Profile 15638-9-5: (May be added in a later edition)
- C.7 Profile 15638-9-6: (May be added in a later edition)
- C.8 Profile 15638-9-7: (May be added in a later edition)
- C.9 Profile 15638-9-8: (May be added in a later edition)
- C.10 Profile 15638-9-9: (May be added in a later edition)
- C.11 Profile 15638-9-10: (May be added in a later edition)

Page count: 97