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TECHNICAL SPECIFICATION

**Intelligent Transport Systems (ITS);
Security;
Testing;
ITS Misbehaviour Reporting;
Interoperability tests specification;
Release 2**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document contains specification of interoperability test descriptions to validate implementations of ETSI TS 103 097 [1], ETSI TS 102 941 [i.3] and ETSI TS 103 759 [2].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

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The following referenced documents are necessary for the application of the present document.

[1]   ETSI TS 103 097 (V2.1.1): "Intelligent Transport Systems (ITS); Security; Security header and certificate formats; Release 2".

[2]   ETSI TS 103 759 (V2.1.1): "Intelligent Transport Systems (ITS); Security; Misbehaviour Reporting service; Release 2".

[3]   Certificate Policy for Deployment and Operation of European Cooperative Intelligent Transport Systems (C-ITS), (Release 1.1).

[4]   ETSI TS 102 965: "Intelligent Transport Systems (ITS); Application Object Identifier (ITS-AID); Registration; Release 2".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1]   ETSI TS 102 940 (V2.1.1): "Intelligent Transport Systems (ITS); Security; ITS communications security architecture and security management; Release 2".

[i.2]   ISO/IEC 15408-2: "Information technology -- Security techniques -- Evaluation criteria for IT security -- Part 2: Security functional components".

[i.3]   ETSI TS 102 941 (V2.2.1): "Intelligent Transport Systems (ITS); Security; Trust and Privacy Management; Release 2".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 103 097 [1], ETSI TS 102 940 [i.1], ETSI TS 102 941 [i.3] and ISO/IEC 15408-2 [i.2].

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI TS 103 097 [1], ETSI TS 102 940 [i.1], ETSI TS 102 941 [i.3] and ISO/IEC 15408-2 [i.2] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 103 097 [1], ETSI TS 102 941 [i.3], ETSI TS 102 940 [i.1] and ISO/IEC 15408-2 [i.2] apply.

4 Requirements and configuration

4.1 Requirements

4.1.1 Overview

In order to perform the interoperability tests defined in the present document, all EUTs shall implement the generic mandatory requirements defined in clauses 4.1.2 and 4.1.3.

NOTE: Interoperability testing between two IUTs cover mandatory requirements and optional requirements supported by the IUTs.

4.1.2 ITS stations

Mandatory requirements:

- The ITS-S shall support data communication using security mechanisms described in ETSI TS 103 759 [2].

- The ITS-S shall support algorithms and key length according to the Certificate Policy [3].

- In order to participate in misbehaviour reporting tests, the ITS-S shall be able to send CAMs and DENMs using V2X communication.

Optional requirements:

PICS	Description
PICS_MBR_SPEED_DETECTOR	The ITS-S supports CAM speed misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.
PICS_MBR_POSITION_DETECTOR	The ITS-S supports CAM position misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.
PICS_MBR_SECURITY_DETECTOR	The ITS-S supports CAM security misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.
PICS_MBR_ACC_DETECTOR	The ITS-S supports CAM longitudinal acceleration misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.
PICS_MBR_BEACON_DETECTOR	The ITS-S supports CAM beaconing misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.
PICS_MBR_STATIC_DETECTOR	The ITS-S supports CAM static misbehaviour detector as defined in ETSI TS 103 759 [2], clause 4.2.

4.1.3 Misbehaviour Authority

Mandatory requirements:

- The Misbehaviour Authority shall support data communication using security mechanisms described in ETSI TS 103 759 [2].

- The Misbehaviour Authority shall support algorithms and key length according to the Certificate Policy [3].

4.2 Configurations

4.2.1 Overview

In order to participate in the test with the present configurations, IUTs (participating entities) shall be configured as follows:

- All participating ITS-Ss are in the "authorized" state (equipped with valid ATs).

- The AT of participating ITS-Ss allows the transmission of CAMs and DENMs in the time and place of UC execution.

- The ITS-S AT allows issuing of MRs for CAM and DENM.

- The MA certificates used for MRs encryption shall be valid for the time and location of the UC execution.

- All involved CA certificates shall be known and trusted by all participating ITS-S.

NOTE: Use-case definitions may contain additional configuration details.

4.2.2 CFG_LONG_RANGE communication

This clause describes the configuration used to execute misbehaviour reporting test scenarios. The configuration contains the following entities:

- Actor - The virtual ITS-S producing the fault message or behaviour.

- Detector - The ITS-Sdetecting the misbehaviour and sending the MR using the long range communication channel.

- Receiver MA - The Misbehaviour Authority receives MR from the Detector by the long range communication channel.

4.2.3   CFG_SHORT_RANGE communication

This clause describes the configuration used to execute misbehaviour reporting test scenarios focused on forwarding between an ITS-S and an RSU. The configuration contains the following entities:

- Actor - The virtual ITS-S producing the fault message or behaviour.

- Detector - The ITS-S detecting the misbehaviour and sending the MR using the short range communication channel.

- Forwarder - The ITS-S receiving the MR from the Detector and forwarding it to the MA.

- Receiver MA - The Misbehaviour Authority receives MR from the Forwarder.

- In order to participate in the test with the present configurations, IUTs (participating entities) shall be configured as follows: The communication network configuration is compliant with the ETSI TS 103 759 [2] and clause 5.

    NOTE: Use-case definitions may contain additional configuration details.

4.3   Inconsistent ITS messages generator

A virtual ITS-S device was developed by ETSI. This virtual device generates inconsistent ITS messages according to the different usage required by the Interoperability test descriptions.

5   Requirements to be tested

5.1   Overview

The clauses below collect and enumerate the requirements that can be tested with the present interoperability test specification.

5.2   ITS-S communication messages

NN	Requirement	References	UCs
1.1.	ITS-S may implement a CAM Speed local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.2.1, 6.3.3
1.2.	ITS-S may implement a CAM Position local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.2.2
1.3.	ITS-S may implement a CAM Acceleration local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.2.3, 6.3.4
1.4.	ITS-S may implement a CAM Security local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.2.4
1.5.	ITS-S may implement a CAM Beacon local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.3.1
1.6.	ITS-S may implement a CAM Static local misbehaviour detection service	ETSI TS 103 759 [2], clause 4.2.2	6.3.2
1.7.	ITS-S shall implement misbehaviour reporting	ETSI TS 103 759 [2], clause 4.2.3	All

6 Interoperability test descriptions

6.1 Overview

Interoperability test descriptions consist of two groups:

- Misbehaviour Detection service for class 1 as defined in ETSI TS 103 759 [2], clause 6.2.

- Misbehaviour Detection service for class 2 as defined in ETSI TS 103 759 [2], clause 6.2.

These groups are described in the clauses below.

6.2 Misbehaviour Detection service for class 1

6.2.1 CAM speed misbehaviour detector

Interoperability Test Description			
Identifier	TD_MBR_CLASS1_CAM_SPEED_UC1		
Objective	Verify that CAM speed misbehaviour detector generated a MR		
Description	The "actor" ITS-S is sending secured CAM with inconsistent speed value regarding the type of vehicle. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.1, 1.7		PICS_MBR_SPEED_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send CAMs with an inconsistent speed (e.g. a passengerCar with a speed of 400 km/h)	
2	Verify (by Receiver)	The "detector" generates a MR report and send it to MA	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Speed-ValueTooLarge-VehicleType observation

Interoperability Test Description			
Identifier	TD_MBR_CLASS1_CAM_SPEED_UC2		
Objective	Verify that CAM position misbehaviour detector generated a MR (driving backwards too fast)		
Description	The "actor" ITS-S is sending secured CAM with inconsistent backward speed value. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.1, 1.7		PICS_MBR_SPEED_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with a backwards speed of 100 km/h	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Speed-ValueTooLarge-DriveDirectionReverse observation

6.2.2 CAM position misbehaviour detector

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_POSITION_UC1			
Objective	Verify that CAM position misbehaviour detector generated a MR			
Description	The "actor" ITS-S is sending secured CAM with inconsistent position value regarding the position of the receiver and coverage area. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.2, 1.7		PICS_MBR_POSITION_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with a position outside of the communication range (e.g. position in another city)		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-Position-ChangeTooLarge observation

6.2.3 CAM Acceleration misbehaviour detector

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_LONG_ACC_UC1			
Objective	Verify that CAM acceleration misbehaviour detector generated a MR			
Description	The "actor" ITS-S is sending secured CAM with inconsistent longitudinal acceleration value regarding the type of vehicle (e.g. 20 m/s/s). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.3, 1.7		PICS_MBR_ACC_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with an inconsistent longitudinal acceleration (e.g. 20 m/s/s)		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-LongAcc-ValueTooLarge observation

6.2.4   CAM Security misbehaviour detector

Interoperability Test Description	
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC1
Objective	Verify that CAM security misbehaviour detector generated a MR - Wrong HeaderInfo PSID
Description	The "actor" ITS-S is sending secured CAM with HeaderInfo Psid field set to AID_DENM (see ETSI TS 102 965 [4], clause 7.1.1). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator
Configuration	The **CFG_LONG_RANGE** configuration shall be used
Pre-test conditions	

REQ / PICS	Tested Requirements	PICS
	1.4, 1.7	PICS_MBR_SECURITY_DETECTOR

Step	Type	Description	Result
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with HeaderInfo Psid field set to AID_DENM	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Security-MessageIdIncWithHeaderInfo observation

Interoperability Test Description	
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC2-1
Objective	Verify that CAM security misbehaviour detector generated a MR - Missing HeaderInfo mandatory field
Description	The "actor" ITS-S is sending secured CAM with HeaderInfo inconsistent with CAM Security profile (see ETSI TS 102 965 [1], clause 7.1.1). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator
Configuration	The **CFG_LONG_RANGE** configuration shall be used
Pre-test conditions	

REQ / PICS	Tested Requirements	PICS
	1.4, 1.7	PICS_MBR_SECURITY_DETECTOR

Step	Type	Description	Result
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with HeaderInfo Psid field not present	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Security-HeaderIncWithSecurityProfile observation

Interoperability Test Description			
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC2-2		
Objective	Verify that CAM security misbehaviour detector generated a MR - Missing HeaderInfo mandatory field		
Description	The "actor" ITS-S is sending secured CAM with HeaderInfo inconsistent with CAM Security profile (see ETSI TS 102 965 [1], clause 7.1.1). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**	**PICS**	
	1.4, 1.7	PICS_MBR_SECURITY_DETECTOR	

Step	Type	Description	Result
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with HeaderInfo GenerationTime field not present	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Security-HeaderIncWithSecurityProfile observation

Interoperability Test Description			
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC3		
Objective	Verify that CAM security misbehaviour detector generated a MR - Inconsistent HeaderInfo field present		
Description	The "actor" ITS-S is sending secured CAM with HeaderInfo inconsistent with CAM Security profile (see ETSI TS 102 965 [1], clause 7.1.1). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**	**PICS**	
	1.4, 1.7	PICS_MBR_SECURITY_DETECTOR	

Step	Type	Description	Result
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with HeaderInfo GenerationPosition field present	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Security-HeaderIncWithSecurityProfile observation

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC4-1			
Objective	Verify that CAM security misbehaviour detector generated a MR - Invalid certificate validity			
Description	The "actor" ITS-S is sending secured CAM with HeaderInfo inconsistent with CAM Security profile (see ETSI TS 102 965 [1], clause 7.1.1). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.4, 1.7		PICS_MBR_SECURITY_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with certificate validity period in the past		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-Security-HeaderTimeOutsideCertificateValidity

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_SECURITY_U4			
Objective	Verify that CAM security misbehaviour detector generated a MR - Invalid SSP			
Description	The "actor" ITS-S is sending secured CAM signed with a certificate which as no CAM SSPs. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.4, 1.7		PICS_MBR_SECURITY_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with certificate which as no CAM SSPs		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-Security-IncWithSsp observation

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC5-1			
Objective	Verify that CAM security misbehaviour detector generated a MR - Invalid certificate validity			
Description	The "actor" ITS-S is sending secured CAM signed with a certificate not valid. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.4, 1.7		PICS_MBR_SECURITY_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with certificate validity period in the past		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-Security-HeaderTimeOutsideCertificateValidity observation

Interoperability Test Description				
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC5-2			
Objective	Verify that CAM security misbehaviour detector generated a MR - Invalid certificate validity			
Description	The "actor" ITS-S is sending secured CAM signed with a certificate not valid. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator			
Configuration	The **CFG_LONG_RANGE** configuration shall be used			
Pre-test conditions				
REQ / PICS	**Tested Requirements**		**PICS**	
	1.4, 1.7		PICS_MBR_SECURITY_DETECTOR	
Step	**Type**	**Description**		**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with certificate validity period in the future		
2	Verify (by Receiver)	The "detector" generates a MR report		The MR report is sent to the MA
3	MA	The MA processes the MR report		The MA detects the obs-Security-HeaderTimeOutsideCertificateValidity observation

Interoperability Test Description			
Identifier	TD_MBR_CLASS1_CAM_SECURITY_UC6		
Objective	Verify that CAM security misbehaviour detector generated a MR - Invalid message location		
Description	The "actor" ITS-S is sending secured CAM with a location inconsistent with the signer certificate. The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.4, 1.7		PICS_MBR_SECURITY_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with message location not in France	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Security-MessageLocationOutsideCertificateValidity observation

6.3 Misbehaviour Detection service for class 2

6.3.1 CAM Beacon misbehaviour detector

Interoperability Test Description			
Identifier	TD_MBR_CLASS2_CAM_STATIC_UC1		
Objective	Verify that CAM static data misbehaviour detector generated a MR		
Description	The "actor" ITS-S is sending several secured CAMs with a variable frequency between 0,5 to 30 Hz. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.5, 1.7		PICS_MBR_BEACON_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with a variable frequency	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Beacon-IntervalTooSmall observation.

6.3.2 CAM Static misbehaviour detector

Interoperability Test Description			
Identifier	TD_MBR_CLASS2_CAM_STATIC_UC1		
Objective	Verify that CAM static data misbehaviour detector generated a MR		
Description	The "actor" ITS-S is sending several secured CAMs with as VehicleRole set to passengerCar. One ITS-S is starting to send several secured CAMs with a different VehicleRole (e.g. motorcycle). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.6, 1.7		PICS_MBR_STATIC_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with a different VehicleRole	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Static-Change observation

Interoperability Test Description			
Identifier	TD_MBR_CLASS2_CAM_STATIC_UC2		
Objective	Verify that CAM static data misbehaviour detector generated a MR		
Description	The "actor" ITS-S is sending several secured CAMs with as VehicleRole set to passengerCar with correct vehicle dimensions. One ITS-S is starting to send several secured CAMs with a different vehicle dimensions (e.g. dimension of a Trailor vehicle type). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.6, 1.7		PICS_MBR_STATIC_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with a different VehicleRole	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Static-Change observation

6.3.3 CAM speed misbehaviour detector

Interoperability Test Description			
Identifier	TD_MBR_CLASS2_CAM_SPEED_UC1		
Objective	Verify that CAM speed misbehaviour detector generated a MR		
Description	One ITS-S sends several secured CAM with a valid speed regarding the type of vehicle (e.g. passengerCar with a speed of 50 km/h). The "actor" ITS-S is sending secured CAM with an inconsistent speed (e.g. passengerCar with a speed of 400 km/h). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.1, 1.7		PICS_MBR_SPEED_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send CAMs with an inconsistent speed (e.g. a passengerCar with a speed of 400 km/h)	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-Speed-ChangeTooLarge observation

6.3.4 CAM acceleration misbehaviour detector

Interoperability Test Description			
Identifier	TD_MBR_CLASS2_CAM_LONG_ACC_UC1		
Objective	Verify that CAM acceleration misbehaviour detector generated a MR		
Description	One ITS-S sends several secured CAM with a valid longitudinal acceleration value regarding the type of vehicle (e.g. a passengerCas with an acceleration of 3 m/s/s). The "actor" ITS-S is sending a secured CAM with an inconsistent longitudinal acceleration value regarding the type of vehicle (e.g. a passengerCas with an acceleration of 23 m/s/s). The "detector" ITS-S detects the misbehaviour and generates a MR. The MA accepts the MR and send a report to the Device Operator		
Configuration	The **CFG_LONG_RANGE** configuration shall be used		
Pre-test conditions			
REQ / PICS	**Tested Requirements**		**PICS**
	1.3, 1.7		PICS_MBR_ACC_DETECTOR
Step	**Type**	**Description**	**Result**
1	Stimulus (by Sender)	The "actor" is triggered to send secured CAMs with an inconsistent longitudinal acceleration (e.g. 20 m/s/s)	
2	Verify (by Receiver)	The "detector" generates a MR report	The MR report is sent to the MA
3	MA	The MA processes the MR report	The MA detects the obs-LongAcc-ValueTooLarge observation

Annex A (informative):
Bibliography

- ETSI EG 202 798 (V1.1.1): "Intelligent Transport Systems (ITS); Testing; Framework for conformance and interoperability testing".

History

Document history		
V2.1.1	November 2023	Publication