



SLOVENSKI STANDARD
SIST-TS CEN/TS 15213-6:2011
01-julij-2011

Cestna transportna in prometna telematika - Sistemi za odkrivanje ukradenih vozil
- 6. del: Preskusni postopki

Road transport and traffic telematics - After-theft systems for the recovery of stolen vehicles - Part 6: Test procedures

Straßenverkehrstelematik (RTTT) - Systeme für das Wiederfinden gestohlener Fahrzeuge - Teil 6: Prüfungen

Télématique des transports - Recherche des véhicules volés - Partie 6: Modes opératoires d'essai

ITIH STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ae6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011>

Ta slovenski standard je istoveten z: CEN/TS 15213-6:2011

ICS:

13.310	Varstvo pred kriminalom	Protection against crime
43.040.15	Avtomobilska informatika. Vgrajeni računalniški sistemi	Car informatics. On board computer systems

SIST-TS CEN/TS 15213-6:2011

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST-TS CEN/TS 15213-6:2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ae6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011)

<https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ae6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011>

TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 15213-6

May 2011

ICS 35.240.60

English Version

**Road transport and traffic telematics - After-theft services for the
recovery of stolen vehicles - Part 6: Test procedures**

Télématique des transports - Recherche des véhicules
volés - Partie 6: Modes opératoires d'essai

Straßenverkehrstelematik (RTTT) - Systeme für das
Wiederfinden gestohlener Fahrzeuge - Teil 6: Prüfungen

This Technical Specification (CEN/TS) was approved by CEN on 9 September 2008 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[SIST-TS CEN/TS 15213-6:2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011)

[https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-
fe95fde54d42/sist-ts-cen-ts-15213-6-2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011)



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

1	Scope	6
2	Normative references	6
3	Terms and definitions	7
4	Test Schedule.....	7
5	Test Conditions.....	7
5.1	General.....	7
5.2	Standard Atmospheric Conditions for Testing.....	7
5.3	Mounting and Orientation	8
5.4	Electrical Connections	8
5.5	Connection to Engine Crank Inhibitor (Where relevant to system).....	8
6	Basic Tests	8
6.1	General.....	8
6.2	Functional Test for ATSVR with Position Reporting Telemetry Features	9
6.2.1	Object of the Test.....	9
6.2.2	Test Procedure.....	9
6.2.3	Criteria for Compliance	9
6.3	Functional Test for ATSVR with Optional Ignition Inhibition Function.....	10
6.3.1	Object of the Test.....	10
6.3.2	Test Procedure.....	10
6.3.3	Criteria for Compliance	10
6.4	Functional Test for ATSVR with Tracking Device	10
6.4.1	Object of the Test.....	10
6.4.2	Test Procedure.....	10
6.4.3	Criteria for Compliance	11
7	General.....	11
7.1	Practical Issues.....	11
7.2	Enclosure Protection.....	11
7.2.1	General.....	11
7.2.2	Resistance to Foreign Objects	11
7.2.3	Resistance to Water Ingress.....	12
7.2.4	Resistance to Impacts	12
7.3	Interconnections	13
7.4	Resistance of Connectors to Tensile Forces.....	14
7.4.1	Object of the Test.....	14
7.4.2	Test Procedure.....	14
7.5	Adjustments	14
7.6	Setting/Unsetting Devices	15
7.6.1	Construction.....	15
7.6.2	Reprogramming of Key Codes	15
7.6.3	Wire-free Keys.....	16
7.6.4	Electronic Direct Connection Keys, Proximity Keys, Keypads or Combinational Action Input Devices.....	17
7.6.5	Cyclic Reliability Test.....	18
7.7	Electrical Tests.....	19
7.7.1	Protection	19
7.7.2	Power Supply Voltage Variation.....	19
7.7.3	Current Consumption.....	20
7.7.4	Toleration of the Loss of Power Supply to the Vehicle Security System	21
7.7.5	Power Supply Reversal	22

7.7.6	Power Supply over Voltage	23
7.8	Control of Software/Firmware	23
7.9	Installation Instructions	24
7.10	User Instructions	25
7.10.1	Object of the Test	25
7.10.2	Test Procedure	25
7.10.3	Criteria for Compliance.....	25
7.11	Marking.....	25
7.11.1	Object of the Test	25
7.11.2	Test Procedure	25
7.11.3	Criteria for Compliance.....	26
8	Functional Tests	26
8.1	Immunity to Slow Power Supply Reduction	26
8.1.1	Object of the Test	26
8.1.2	Test Procedure	26
8.1.3	Criteria for Compliance.....	26
8.2	Detectors	26
8.2.1	Object of the Test	26
8.2.2	Test Procedure	27
8.2.3	Criteria for Compliance.....	27
8.3	Standby Power Supply Capacity	27
8.3.1	ATSVR systems requiring Connection to the Vehicle Power Supply	27
8.4	Attack with Mechanical Impact	28
8.4.1	General	28
8.4.2	Object of the Test	28
8.4.3	Test Procedure	28
8.4.4	Criteria for Compliance.....	29
9	Electrical Attack Tests	30
9.1	Attack with High Electromagnetic Fields 50V/m	30
9.1.1	Object of the Test	30
9.1.2	Test Procedure	30
9.1.3	Criteria for Compliance.....	31
9.2	Open Circuiting Control Connections.....	31
9.2.1	General	31
9.2.2	Object of the Test	31
9.2.3	Criteria for Compliance.....	31
9.3	Short Circuiting Control Connections.....	32
9.3.1	General	32
9.3.2	Object of the Test	32
9.3.3	Test Procedure	32
10	Power Supply	32
10.1	General	32
10.2	Removal and Reinstatement of Power Supply	32
10.2.1	Object of the Tests	32
10.2.2	Test Procedure	33
10.2.3	Criteria for Compliance.....	33
10.3	Overvoltage on Power Supply Terminations.....	34
10.3.1	Object of the Test	34
10.3.2	Test Procedure	34
10.3.3	Criteria for Compliance.....	34
10.4	Overvoltage on Power Supply Terminations - Reversed Polarity.....	34
10.4.1	Object of the Test	34
10.4.2	Test Procedure	34
10.4.3	Criteria for Compliance.....	35
10.5	Short Circuiting of Accessible Input Terminations to Positive Voltage and 0 Voltage	35
10.5.1	Object of the Test	35
10.5.2	Test Procedure	35
10.5.3	Criteria for Compliance.....	36

CEN/TS 15213-6:2011 (E)

10.6	Open Circuiting Accessible Input Terminations	36
10.6.1	Object of the Test.....	36
10.6.2	Test Procedure.....	36
10.6.3	Criteria for Compliance	37
10.7	Removal and Re-instatement of Fuses	37
10.7.1	Object of the Test.....	37
10.7.2	Test Procedure.....	37
10.7.3	Criteria for Compliance	37
11	Environmental Influence	38
11.1	Operational Tests.....	38
11.1.1	Dry heat.....	38
11.1.2	Cold	39
11.1.3	Temperature and Humidity Cycling	40
11.1.4	Vibration, Sinusoidal - Operational.....	42
11.1.5	Electrical Transients - Coupled onto Supply Lines.....	43
11.1.6	Electrical Transients - Coupled onto Lines other than Supply Lines	45
11.1.7	Electromagnetic Fields - Bulk Current Injection	46
11.1.8	Electromagnetic Fields - Radiated Energy.....	48
11.1.9	Electrostatic Discharge	49
11.1.10	Free Fall	51
11.1.11	Temperature Shock	52
11.2	Endurance tests	53
11.2.1	Salt mist corrosion	53
12	Practical test of system in vehicle	54
12.1	Test procedure	54
12.2	Criteria for compliance.....	55
Annex A (informative)	Example of a Component Test Matrix.....	56
Bibliography		58

[SIST-TS CEN/TS 15213-6:2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011)

<https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011>

Foreword

This document (CEN/TS 15213-6:2011) has been prepared by Technical Committee CEN/TC 278 “Road transport and traffic telematics”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

The Technical Committee acknowledges the Motor Insurance Repair Research Centre (Thatcham) Colthrop Way, Thatcham, Berkshire RG19 4NR, United Kingdom for use of their CAT5 test framework as the basis for this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST-TS CEN/TS 15213-6:2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ae6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011)

<https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ae6-fe95fde54d42/sist-ts-cen-ts-15213-6-2011>

CEN/TS 15213-6:2011 (E)**1 Scope**

This document specifies the Test Criteria for after-theft services for the recovery of stolen vehicles (ATSVR), and their control and use with electronic and electromechanical inhibitor control equipment utilising both conventional switched outputs and/or soft-coded outputs of setting and unsetting devices, detectors, warning devices and ancillary equipment, for fitting to vehicles operating on 12/24 V negative earth electrical systems.

The requirements and tests specified in this standard enable reasonable assessment of components performance with regard to safety, reliability, functionality, security and documentation. To provide reproducible test methods and to avoid the proliferation of technically similar test methods, the test procedures have been chosen, where possible, from internationally accepted standards. For specific guidance on these tests, reference is made to the appropriate document. In the context of the test procedures the term "specimen(s)" shall refer to the component or components of the ATSVR under test. To identify the tests that are to be applied to each type of component, reference shall be made to the table 23 in Annex A1.

The document assumes and requires that all other electrical and radio standards relevant to vehicles are complied with and shall take precedent in the event of conflict with any requirement in these ATSVR requirements.

This document is not intended to stifle technical development or prevent the use of new methods of detection, communication or implementation applied to an ATSVR device or system.

In the event that an ATSVR system uses technology that renders any of the tests contained in this document inappropriate (e.g. a technology that was not envisaged when the standard was developed) then the 'spirit' rather than the 'letter' of the standard should apply.

STANDARD PREVIEW
(standards.iteh.ai)

2 Normative references

SIST-TS CEN/TS 15213-6:2011

The following referenced documents are indispensable for the application 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.

EN 60068-1, *Environmental testing — Part 1: General and guidance*

EN 60068-2-1, *Environmental testing — Part 2-1: Tests — Tests A: Cold*

EN 60068-2-2, *Environmental testing — Part 2-2: Tests — Test B: Dry heat*

EN 60068-2-11, *Environmental testing — Part 2: Tests — Test Ka: Salt mist*

EN 60068-2-14, *Environmental testing — Part 2: Tests — Test N: Change of temperature*

EN 60068-2-38, *Environmental testing — Part 2: Tests — Test Z/AD: Composite temperature/humidity cyclic test*

EN 60529, *Degrees of protection provided by enclosures (IP code)*

EN 60068-2-75, *Environmental testing — Part 2: Tests — Test Eh: Hammer tests (IEC 60068-2-75:1997)*

ISO 7637, *Road vehicles — Electrical disturbances from conduction and coupling*

ISO 10605, *Road vehicles — Test methods for electrical disturbances from electrostatic discharge*

ISO 11452-4, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 4: Bulk current injection (BCI)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

class 1 Components

parts of the ATSVR suitable for mounting in any location on a vehicle

3.2

class 2 Components

parts of the ATSVR that is suitable only for mounting in the passenger/boot/cabin compartment area of a vehicle

3.3

change of state

change of the ATSVR from the SET to the UNSET condition and vice versa, or the change of condition of any output

EXAMPLE Operation of a visible or audible warning device, or the ATSVR set/unset indicator.

Unset ATSVR not operating/tracking (vehicle in correct operation by owner).

Set ATSVR active (vehicle in parked position by owner).

Alarm ATSVR activated tracking (vehicle moved without the owner's approval)

3.4

voltage drop detector

device applied to detect small changes of voltage due to variations of load on the electrical supply of a vehicle

3.5

ignition detection

means to detect the presence of an ignition signal

4 Test Schedule

The components of the ATSVR and the associated documentation shall be submitted for evaluation to a Test Establishment or Test House recognised as such by the Standardisation Body of CEN countries.

The Test House shall ensure that any testing does not impact the normal work of an LEA (Law Enforcement Agency) or SOC (Secure Operating Centre).

5 Test Conditions

5.1 General

During the environmental conditioning, detectors under test shall be shielded from the unwanted effects of vibration and air movement within the test environment. It is recommended that active technology devices have their field of view focused on to a non-reflecting surface able to absorb most of the transmitted energy thus preventing movement within the test apparatus being processed as an alarm stimulus. Care must be taken to ensure the chosen material does not influence the conditioning during the test.

5.2 Standard Atmospheric Conditions for Testing

The atmospheric conditions in the test laboratory shall be the standard atmospheric conditions for measurements and tests specified in EN 60068-1, Paragraph 5.3.1, as follows:

CEN/TS 15213-6:2011 (E)

Temperature:	15-35 °C
Relative humidity:	25-75 %
Air pressure:	86-106 kPa

5.3 Mounting and Orientation

Unless otherwise specified, the tests shall be performed with the specimen(s) fully assembled and mounted in an orientation appropriate for their normal use by the means recommended by the manufacturer.

5.4 Electrical Connections

During the tests the specimen(s) shall be connected to the other components of the Vehicle that are necessary to enable correct operation. Even if a single component part of an ATSVR is to be evaluated, it shall be tested whilst interconnected to the other associated components to ensure the test conditions are representative of those in normal use.

Unless specified otherwise, the specimen(s) shall be powered from the nominal supply voltage and shall be placed in the unset condition, i.e. with the ignition supply present (Ignition switch in the engine running position).

NOTE Refers to the terminal designation of the Ignition controlled feed as described in DIN 72552.

Where the following test procedures refer to the removal of the ignition supply to simulate the conditions required to initiate passive setting, it shall represent the ignition switch of a vehicle being turned to the OFF position. Each output from the specimen(s) shall be connected to suitable monitoring apparatus. Unless the output device is an electromechanical type relay contact, the output shall be terminated into a suitable load representative of that in normal use as advised by the manufacturer.

SIST-TS CEN/TS 15213-6:2011

Table 1

<https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-4977de54d42/sist-ts-cen-ts-15213-6-2011>

Vehicle Supply	Nominal Voltage
24 Volts System	24V +/- 0,8 V
12 Volt System	12V +/- 0,4 V

5.5 Connection to Engine Crank Inhibitor (Where relevant to system)

If the system is designed to be connected to an engine crank inhibitor, then during the tests, the specimen shall be connected to the other components of the ATSVR that are necessary to enable correct operation. Even if a single part of an ATSVR is to be evaluated, it shall be tested whilst interconnected to the other associated components to ensure the test conditions are representative of those in normal use.

The Tracking device and inhibitor components shall be configured as intended in the vehicle.

6 Basic Tests**6.1 General**

The following basic tests are applied to demonstrate correct operation of the specimen(s) before, after and in some circumstances during the exposure to the various conditioning influences specified by this test specification. The selection of the appropriate standard test is determined by the type of component under evaluation.

The Test House shall include in its report those tests that have been carried out on the components of the ATSVR and shall state those tests that are not relevant to specific components. The applicability of a specific test shall not prevent approval of the components of the ATSVR.

This standard is technology and solution agnostic. It does not prescribe the technology to be used.

6.2 Functional Test for ATSVR with Position Reporting Telemetry Features

6.2.1 Object of the Test

To provide a means to evaluate changes in the operation that may occur as a result of exposure to the environmental influences defined in this specification.

6.2.2 Test Procedure

Each configuration of the ATSVR shall be tested in an environment suitable for the operation of that ATSVR. Minor variations of configuration shall not require a complete separate test.

Where the device has additional features, such as an output to an inhibitor/internal status indicator, they shall be connected to enable them to be tested for correct operation.

Ensure the device is in the unset/operating condition and apply the following sequence where the feature is relevant to the particular system being tested:

- a) Place the device in the set condition by following the procedure for setting described in the operating instructions. Where necessary simulate the operation of the electrical system of the vehicle to which the device is designed to be fitted.

Using a suitable method determined by the operation of the device, confirm the system has entered set condition.

Verify that the system will automatically transmit an alarm signal if:

- The engine state being OFF and the vehicle moves. Movement being defined as a greater than 100 meter (+/- 20M) change in location that persists for more than 2 min. The time period is required in order to avoid false alarms.
- Requested by the test receiving station after a report from the owner.
- The vehicle is started without using the correct unsetting procedure.

The system shall transmit a location report/data/signal within a predetermined time scale after setting. In the event of a change to the state or location of the vehicle, an alarm signal shall be transmitted to the test receiving station or in accordance with the system technology so as to achieve a similar result.

- b) After a duration of 300 s, unset the system by once again following the procedure described in the operating instructions and where necessary simulating the operation of the vehicle's electrical system.

6.2.3 Criteria for Compliance

The system shall have entered the set and unset conditions in accordance with the manufacturer's operating instructions, as applicable to the type of ATSVR being evaluated.

CEN/TS 15213-6:2011 (E)**6.3 Functional Test for ATSVR with Optional Ignition Inhibition Function****6.3.1 Object of the Test**

To provide a means to evaluate changes in the tracking device that may occur as a result of exposure to the environmental influences defined in this specification.

6.3.2 Test Procedure

The state of the tracking device shall be as defined in Clause 5.

Ensure the tracking device is in the set/normal condition and apply the following sequence:

Check the device:

- a) If the ATSVR has a location position capability then ensure that it has a suitably accurate location position.
- b) Communication link is working and data information is correctly received

If connected to a vehicle security system, check the following, operation of the tracking system:

- c) Place the inhibitor in the set condition by applying the required input from the relevant sensor. Check the inhibitor has set.
- d) Place the inhibitor in the unset condition by applying the required input from the relevant sensor.
- e) Check that the correct information (input and outputs) is transmitted correctly.

6.3.3 Criteria for Compliance

The ATSVR shall have entered the correct condition where an ignition inhibit module is connected. It shall be operated and placed in the correct mode in accordance with the manufacturer's operating instructions

6.4 Functional Test for ATSVR with Tracking Device**6.4.1 Object of the Test**

To provide a means to evaluate changes in the tracking device that may occur as a result of exposure to the environmental influences defined in this specification.

6.4.2 Test Procedure

Ensure the ATSVR is in a suitable location for normal operation.

Ensure the tracking device is in the set/normal condition and apply the following sequence:

Check the device:

- a) has a suitably accurate location position.
- b) Communication link is working and data information is correctly received

If connected to a vehicle security system, then check the following:

- c) Place the ATSVR in the set condition by applying the required input. Check the ATSVR has set.
- d) Activate one Vehicle Telemetric Security System cycle.

- e) Check that the correct data is transmitted to the test receiving station.
- f) Place the ATSVR in the unset condition by applying the required input from the tracking system.

6.4.3 Criteria for Compliance

The tracking device shall have entered the correct condition. It shall be operated and placed in the correct mode in accordance with the manufacturer's operating instructions.

7 General

7.1 Practical Issues

The Test House shall not be required to carry out any tests to any component that has already been approved to an equivalent CEN automotive standard.

7.2 Enclosure Protection

7.2.1 General

This paragraph applies to those elements of an ATSVR system that are accessible to the vehicle user in normal vehicle operation and are identifiable as elements of an ATSVR. They do not apply to those elements of an ATSVR that are covertly installed or that make use of items of normal vehicle fit or that replicate items of a normal vehicle fit.

Verify by inspection and assessment that the enclosure housing of the control unit(s) are fabricated from heavy gauge steel, or comparable strength composite material, or alternatively that the control units are reinforced to an equivalent standard. The enclosure housing shall be securely glued, cast, welded, riveted or screwed together using one-way screws.

7.2.2 Resistance to Foreign Objects

7.2.2.1 Object of the Test

The object of the test is to demonstrate that the construction of the specimen(s) housing can prevent the ingress of foreign objects.

7.2.2.2 Test Procedures

The procedures and apparatus of the following test shall be as defined in EN 60529. Unless specified otherwise, the specimen(s) shall be fully assembled and secured to a mounting surface via the normal fixing points recommended by the manufacturer. The following procedure is in accordance with the protection rating IP4X and shall be applied to both **Class 1 and Class 2** components.

The test is to be made with a straight rigid steel wire of 1 (+ 0,05 - 0) mm diameter applied with a force of 1 N \pm 10 %. The end of the wire shall be free from burrs and at right angles to its length.

Attempt to insert the steel wire into every accessible hole or gap in the specimen(s) housing.

7.2.2.3 Criteria for Compliance

It shall not be possible to insert the 1 (+ 0,05 - 0) mm steel wire into any hole or gap in the specimen(s) housing. However, the insertion of the steel wire into the sound outlet apertures of audible warning devices is permitted provided it is not possible to prevent the sound generator from operating, and provided direct access cannot be gained to circuit components critical to the operation of the warning device.

CEN/TS 15213-6:2011 (E)

7.2.3 Resistance to Water Ingress

7.2.3.1 Object of the Test

To demonstrate that the construction of the specimen(s) housing can prevent the ingress of spraying water in accordance with the protection rating IPX6 and shall be applied to **Class 1 components only**.

7.2.3.2 Test Procedures

The following test is to be applied subject to the appropriate class of component. The procedures and apparatus shall be as defined in EN 60529. Unless specified otherwise, the specimen(s) shall be fully assembled and secured to a mounting surface via the normal fixing points recommended by the manufacturer.

The specimen(s) shall be sprayed from every practical direction with a stream of water from a standard test nozzle 12,5 mm in diameter, providing a delivery rate of 100 l/min \pm 5 %, in accordance with the procedure described in paragraph 14.2.6 of EN 60529:1991. The conditioning shall be applied for 10 min.

The specimen(s) shall be un-powered during the conditioning.

After the conditioning, apply the appropriate basic functional test.

Where possible, inspect the specimen(s) visually for signs of water ingress.

7.2.3.3 Criteria for Compliance

Following the visual inspection, there shall be no sign of water ingress into the specimen(s) housing.

Water ingress may be permitted into the sound output chamber of audible warning devices provided the water has not entered past the diaphragm and into the part of the enclosure housing components critical to the operation of the device.

The specimen(s) shall function correctly when subjected to the appropriate basic functional test.

7.2.4 Resistance to Impacts

The following test shall be applied to both Class 1 and 2 components.

7.2.4.1 Object of the Test

The object of the test is to demonstrate the immunity of the specimen(s) to mechanical impacts upon the surface, which it may sustain in the normal service environment and which it can reasonably be expected to withstand.

7.2.4.2 Test Procedure

7.2.4.2.1 General

The test apparatus and procedure shall be as described in EN 60068-2-75.

Impacts shall be applied to all accessible surfaces of the specimen(s). It shall not, however, be applied to setting and unsetting devices.

For all such surfaces, three blows shall be applied to any points considered likely to cause damage to or impair the operation of the specimen(s).

Care should be taken to ensure that the results from one series of three blows do not influence subsequent series. In case of doubt with regard to the influence of preceding blows, the defect shall be disregarded and a further three blows shall be applied to the same position on a new specimen(s).

7.2.4.2.2 Initial Examination

Before conditioning, subject the specimen(s) to the appropriate basic functional test.

7.2.4.2.3 State of the Specimen(s) during Conditioning

The state of the specimen shall be as defined in the general test conditions of Clause 5.

7.2.4.2.4 Conditioning

Apply the following severity of conditioning:

Table 2

Severity	
Impact energy (J)	0,5
Number of impacts per point	3

iTeh STANDARD PREVIEW
(standards.iteh.ai)

7.2.4.2.5 Measurements during Conditioning

None.

[SIST-TS CEN/TS 15213-6:2011](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-95fde54d42/sist-ts-cen-ts-15213-6-2011)

[https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-](https://standards.iteh.ai/catalog/standards/sist/490635c1-307e-4d30-8ac6-95fde54d42/sist-ts-cen-ts-15213-6-2011)

7.2.4.2.6 Final Measurements

After subjecting the specimen(s) to the impacts, inspect it visually for mechanical damage. Ensure the appropriate enclosure protection requirements can still be met by applying tests of 7.2.2.

Subject the specimen(s) to the appropriate basic functional test.

7.2.4.3 Criteria for Compliance

There shall be no sign of mechanical damage following the conditioning, and the specimen(s) shall continue to meet the requirements of the appropriate enclosure protection.

The requirements of the basic functional test shall be met.

7.3 Interconnections

This paragraph applies to those elements of an ATSVR system that are accessible to the vehicle user in normal vehicle operation and are identifiable as elements of an ATSVR. They do not apply to those elements of an ATSVR that are covertly installed or that make use of items of normal vehicle fit or that replicate items of a normal vehicle fit.

- Verify by inspection and assessment that provision has been made to ensure that all wires and terminals of the System cannot be readily identified after installation.
- Verify by inspection and assessment of the technical specification that the connectors and interconnecting cables supplied with the ATSVR are to automotive specification and have sufficient