
**INTERSTATE COUNCIL FOR STANDARDIZATION, METROLOGY AND
CERTIFICATION
(ISC)**

**I N T E R S T A T E
S T A N D A R D**

**GOST
34003-2016**

Motor vehicles

**TEST METHODS IN RESPECT TO
AUTOMATIC TRIGGERING OF IN-VEHICLE
EMERGENCY CALL DEVICE/SYSTEM IN THE
EVENT OF VEHICLE ROLLOVER**

**Official Edition
English Version Approved by Interstandard**



**Moscow
Standartinform
2016**

Foreword

The purposes, basic principles and the order of works on interstate standardization are established by GOST 1.0-92 "Interstate Standardization System. Basic Provisions" and GOST 1.2-2009 "Interstate Standardization System. Interstate Standards. Rules and Recommendations for Interstate Standardization. Order of Development, Adoption, Application, Updating and Cancellation"

Data on this Standard

1 DEVELOPED by the Federal State Unitary Enterprise "Central Scientific and Research Institute for Automobile and Auto-Motor Transport NAMI (FGUP NAMI) honoured by Red Banner of Labour" and GLONASS Joint-Stock Company

2 SUBMITTED by Interstate Technical committee for standardization ITC 56 "Road transport"

3 APPROVED by Order No. 92-II, dated 25.10.2016, of Interstate Technical committee on standardization

Votes in favour:

Short name of the country according to IC (ISO 3166) 004—97	Country code according to IC (ISO 3166) 004—97	Abbreviated name of national standards body
Belarus	BY	Gosstandart of Republic Belarus
Kyrgyzstan	KG	Kyrgyzstandart
Russian	RU	Rosstandart
Tajikistan	TJ	Tajikstandart

4 Interstate Standard GOST 34003-2016 is introduced since 01.06.2017 as the national standard of the Russian Federation by Order No. 1754-CT, dated 23.11.2016, of Federal Agency on Technical Regulating and Metrology

5 INTRODUCED FOR THE FIRST TIME

Information on amendments to this Standard is published in the annual information index "National standards" and the text of the amendments and corrections is published in the monthly information index "National standards". In the case of revision (replacement) or cancellation of this Standard an appropriate notice will be published in the monthly information index "National standards". The appropriate information, notice and texts shall also be posted in the general-use information system — on official site of Federal Agency of Technical Regulating and Metrology in the Internet (www.gost.ru)

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Introduction

In-vehicle emergency call devices and systems are used in Category M and N vehicles for generation of minimum set of data on a road accident or other emergency event, for transmission of these data to the emergency response system, and for establishing duplex voice communications with emergency services.

The vehicle rollover is one of the dangerous accident types from the viewpoint of considerable harm to the life and health of people occupying the vehicle cabin (compartment).

Automatic triggering of an in-vehicle emergency call device/system in the event of vehicle rollover is one of the important requirements for device/system functionalities.

There exist sophisticated solutions implementing algorithms of automatic road accident detection based on the information received directly from a sensor (sensors or other devices) intended for identification of such events as vehicle rollovers.

The requirements for automatic triggering criteria of in-vehicle emergency call devices/systems in the event of vehicle rollover and the test methods for vehicles equipped with such devices/systems are detailed in this Standard.

I N T E R S T A T E S T A N D A R D**Motor vehicles****TEST METHODS IN RESPECT TO AUTOMATIC TRIGGERING OF IN-VEHICLE EMERGENCY CALL DEVICE/SYSTEM IN THE EVENT OF VEHICLE ROLLOVER**

Date of Introduction — 2017—06—01, with the provision for application in advance

1 Scope

This Standard applies to motor vehicles of Categories M and N that conform to the Summary Resolution [1] (abbreviated as "vehicles" below), and are equipped with in-vehicle emergency call devices/systems.

The Standard sets out the test methods pertaining to automatic triggering of an in-vehicle emergency call device or system in the event of vehicle rollover.

2 Normative references

The following interstate standards are referred to in this Standard:

GOST 31507-2012 Road vehicles. Handling and stability. Technical requirements. Test methods

GOST 33464-2015 Global navigation satellite system. Road accident emergency response system.

Compliance test methods of in-vehicle emergency call system/device. General technical requirements

N o t e — When using this Standard it is expedient to check the reference standards validity in the general-use information system — on official site of Federal Agency on Technical Regulating and Metrology in Internet or in the annual information index “National standards” published as of January, 1st, of the current year, and in the monthly issued information index “National standards” in the current year. If a reference standard is replaced (amended) then the replacing (amended) standard shall be followed when using his Standard. If a reference standard is cancelled without a replacement, it is recommended to apply the provision which refers to it to a part which does not regard this reference.

3 Terms and definitions

The following terms with their respective definitions are used for the purposes of this Standard:

3.1 **minimum set of data; MSD**: Set of data transmitted by the in-vehicle emergency call system in case of a road traffic accident, including the location and movement parameters of the affected vehicle, the accident time, the vehicle VIN-code and other information necessary for the emergency response

3.2 **vehicle rollover**: Event caused by the loss of vehicle stability after the rollover angle is exceeded

3.3 **rollover angle (critical angle of transverse static stability)**: Transverse vehicle tilt in excess of an angle between the bearing surface of the capsizing platform and the initial horizontal plane at which all wheels from one side of the vehicle detach from the bearing surface

3.4

in-vehicle emergency call device; IVCD: Device providing for evaluation of the vehicle location, speed and movement direction based on the signals from at least two active Global Navigation Satellite systems, for manual transmission of vehicle messages in the case of a road accident or other emergency and for duplex voice communication with emergency services over wireless mobile communication networks

Notes

1 In the case of road accidents or other emergencies, an in-vehicle emergency call device may also support automatic transmission of vehicle messages. The road accident types detected automatically and the timing parameters of the automatic message transmission implemented in the vehicle are established in [1].

2 Vehicle categories subject to equipping with in-vehicle emergency call devices are defined in [1].
[GOST 33464-2015, clause 3.1.19]

3.5

in-vehicle emergency call system; IVCS: System performing the functions of an in-vehicle emergency call device and providing for automatic transmission of vehicle messages in the case of road accidents and other emergencies

Notes

1 Each in-vehicle emergency call system is also capable of manual transmission of vehicle messages in the case of road accidents or other emergencies.

2 Vehicle categories subject to equipping with in-vehicle emergency call systems are defined in [1].
[GOST 33464-2015, clause 3.1.13]

3.6 accident emergency response system: Geographically distributed information system providing for prompt collection (using the signals of the GLONASS Global Navigation Satellite System operating jointly with other active GNSS) of road accident data and data on other emergencies on motor roads as well as for access to these data for the concerned governmental or local authorities, officials, legal and natural persons

Note — The accident emergency response system is called ERA-RB in the Republic of Belarus, EVAK in the Republic of Kazakhstan, and ERA-GLONASS in the Russian Federation. These systems are analogous to the newly developed all-European eCall System that is harmonised with them in regard to basic functional properties (the use of in-band modem as the main data transmission tool; unified content and format of mandatory data transmitted in the minimum set of data on the road accident; uniform procedures for initiation and termination of duplex voice communication with the persons present in the vehicle cabin, etc.).

3.7 simulator of accident emergency response system; SERS: Hardware and software complex used in tests of in-vehicle emergency call systems or devices in order to model real processes of communication setup and data exchange between the vehicles under test and the infrastructure of the emergency response system, and to evaluate the engineering parameters and features of wireless communication modules installed in the tested vehicles equipped with in-vehicle emergency call devices or systems

Note — In such tests, a testing subsystem of the accident emergency response system may be used as a simulator of in-vehicle emergency call systems/devices and vehicles, and the data exchange may be implemented using the actually available wireless mobile communication networks. The latter is permitted providing that a set of relevant measures is taken to ensure the required wireless coverage and signal quality of cellular networks accessible in the location of tests.

3.8 vehicle weight in equipped condition: Weight of the vehicle with the driver and with no load as determined by the manufacturer. The weight includes at least 90% of fuel

3.9 vehicle type in respect to equipping with in-vehicle emergency call device/system: Category of mechanical vehicles that are identical in regard to:

- overall dimensions;

- design, size, shape and material of a vehicle part below the transverse plane through point R of the driver's seat;

- compartment shape and interior dimensions;
- structure of the in-vehicle emergency call device/system (types and models of components and software);
- location and fastening of components of the in-vehicle emergency call device/system;
- optional elements or equipment that are installed by the manufacturer, and affect the performance of the in-vehicle emergency call device/system.

4 General

4.1 The tests are carried out for conformity assessment of vehicles equipped with an in-vehicle emergency call device or system against the requirements of GOST 33464 in part of automatic triggering of such device or system in the event of vehicle rollover.

4.2 The in-vehicle emergency call device or system installed on the vehicle shall comply with the requirements specified in GOST 33464.

4.3 The information on the mounting location of the in-vehicle emergency call device/system on the vehicle shall be reflected in the documents for the in-vehicle emergency call device/system.

4.4 The test item is supplied for its testing with a technical description of the vehicle in part of its equipping with the in-vehicle emergency call device/system in accordance with Appendix A.

4.5 One of the methods specified in 6.2 or 6.3 is used for the tests of vehicles.

5 Test conditions

5.1 Requirements for test item

5.1.1 The vehicle tests as per clauses 6.2 and 6.3 are carried out in the equipped condition.

5.2 The following environmental conditions shall be ensured during the tests:

- air temperature: (20 ± 10) °C;
- relative air humidity: from 45 % to 80 %;
- atmospheric pressure: from 84.0 to 106.7 kPa (from 630 to 800 mm Hg).

Note — Tests in the open air at an ambient temperature from minus 20 °C to 50 °C are permitted.

5.3 The set of testing and auxiliary equipment and of measuring instruments used for testing of vehicles equipped with in-vehicle emergency call devices/systems is described in Table 1.

Table 1

Designation of testing/auxiliary equipment or measuring instrument	Required functionality
Rotary test bench	Ensures transverse tilt of vehicle relative to initial horizontal plane: - angular tilt rate of platform: 2.0 ± 1.0 °/s; - maximum tilt of bench platform: not less than 60°
Simulator of accident emergency response system	In accordance with clause 3.7
Testing platform with gantry for dynamic rollover	Ensures rollover of vehicle running onto tilted gantry
Sensor of vehicle tilt angle	Ensures tilt angle measurement of vehicle relative to initial plane
Sensor of vehicle tilt rate	Ensures tilt rate measurement of vehicle

5.4 All testing equipment used in the tests shall be certified in accordance with the established procedure, and the validity periods of certificates shall not be expired.

5.5 All instruments used in the tests shall be of an approved type, and shall be calibrated (provided with a calibration certificate or a calibration stamp on the instrument, with the calibration period valid for the duration of tests).

6 Test procedure

6.1 Preparation to tests of vehicles with installed in-vehicle emergency call device/system

6.1.1 The identification of the vehicle under test is completed.

6.1.2 The rollover angle is determined using the technique of GOST 31507 for evaluation of the static stability angle for an equipped vehicle.

Note — This measurement may be omitted if the respective information is indicated by the manufacturer in the technical description of the vehicle.

6.2 Test of vehicles for automatic triggering of in-vehicle emergency call device/system in event of rollover (Method 1: Static rollover)

6.2.1 The vehicle under test is installed onto the rotary test bench. The vehicle shall be secured to the platform of the bench in order to prevent from its displacement in all directions.

6.2.2 The vehicle installed on the bench is tilted from the initial position around a horizontal axis parallel to the symmetry axis of the vehicle at a rate of (2.0 ± 1.0) °/s to any side, to an angle exceeding the vehicle rollover angle by 10 %.

Note — The vehicle is installed on the rollover bench in accordance with GOST 31507 (clause 5.5.2).

6.2.3 For vehicles of Categories M₂ and M₃, the tests for automatic triggering of in-vehicle emergency call devices/systems under rollover may be combined with the strength tests of their superstructure in accordance with the Regulations [2].

6.2.4 The MSD reception, its content and the validity of the automatic triggering identifier for the in-vehicle emergency call device/system are checked against the requirements of GOST 33464.

6.2.5 The test results are included in the test report of a form presented in Appendix B.

6.3 Test of vehicles for automatic triggering of in-vehicle emergency call device/system in event of rollover (Method 2: Dynamic rollover)¹⁾

6.3.1 The vehicle rollover is achieved by running onto the tilted gantry at a vehicle run-on speed not less than 40 km/h. An even and solid horizontal platform is used for such rollover.

Note — The gantry dimensions and the run-on speed shall be agreed with the engineering service.

6.3.2 The MSD reception, its content and the validity of the automatic triggering identifier for the in-vehicle emergency call device/system are checked against the requirements of GOST 33464.

6.3.3 The test results are included in the test report of a form presented in Appendix B.

¹⁾ Is in force up to 01.01.2020.

Appendix A
(recommended)

Form used for technical description of vehicle
TECHNICAL DESCRIPTION
of vehicle _____
in regard to equipping with in-vehicle emergency call device/system

1 General

- 1.1 Vehicle model
- 1.2 Trade name
- 1.3 Vehicle type
- 1.4 Modification(s)
- 1.5 Category
- 1.6 Identification number (VIN)
- 1.7 Applicant's name and address
- 1.8 Manufacturer's name and address
- 1.9 Assembly plant and its address (if applicable)
- 1.10 Name and address of supplier of assembly sets (if applicable)

2 General properties of vehicles

- 2.1 Wheel arrangement / driving wheels
- 2.2 Engine location
- 2.3 Body type / number of doors
- 2.4 Capacity
- 2.5 Overall dimensions
- 2.6 Weight of equipped vehicle
- 2.7 Engine (model, type)
- 2.8 Transmission (type)

3 Description of vehicle marking

The following shall be indicated in the description of vehicle marking:

- place of manufacturer's nameplate;
- place of identification number (VIN);
- structure and contents of vehicle identification number (VIN)

4 Vehicle description in regard to equipping with in-vehicle emergency call device/system

4.1 Document certifying the conformity of the in-vehicle emergency call device/system to the requirements of Appendix No. 10 to TR of TU 018/2011, Clause 118

4.2 General information on the in-vehicle emergency call device/system installed on the vehicle (manufacturer, software, models of all components: GSM antennas, GNSS, microphones, loudspeakers, etc.).

4.3 Guidelines for vehicle operation in regard to the in-vehicle emergency call device/system

4.4 Description of automatic triggering principle/criteria of the in-vehicle emergency call device/system

4.5 Description of method simulating failures of the in-vehicle emergency call device/system

4.6 Document confirming non-expired lifetime of a built-in (spare) power supply of the terminal installed on the vehicle submitted to tests

4.7 Appendix (diagrams, drawings, photographs):

- overall view of vehicle;
- indication locations where the components of the in-vehicle emergency call device/system are installed;
- methods used to secure the components of the in-vehicle emergency call device/system onto the vehicle.

**Appendix B
(recommended)**

Form of vehicle test report

_____ company name
address _____ telephone _____ e-mail: _____

Testing laboratory: _____
Accreditation certificate No. _____ dated _____ valid until _____,
issued by _____

APPROVED by

Head of Testing Laboratory (Company)

signature

full name

Stamp: _____ Date _____

REPORT NO.

_____ on vehicle tests
type of tests

vehicle model and type

against the requirements of _____
normative document

in regard to automatic triggering of in-vehicle emergency call device/system in event of vehicle rollover

1 Test item

- 1.1 Model _____
- 1.2 Trade name _____
- 1.3 Vehicle type _____
- 1.4 Modification _____
- 1.5 Category _____
- 1.6 Engine (model, type, number) _____
- 1.7 Vehicle identification number (VIN code) _____
- 1.8 Applicant's name and address _____
- 1.9 Manufacturer's name and address _____
- 1.10 Assembly plant and its address _____
- 1.11 Manufacturer of in-vehicle emergency call device/system _____
- 1.12 Model of device/system _____
- 1.13 Document(s) confirming that in-vehicle emergency call device/system installed on vehicle complies with the requirements of Appendix 10 to TR of CU 018/2011, Clause 118 _____

Bibliography

- [1] ECE/TRANS/WP.29/78 Summary Resolution on Vehicle Design (CP3) of the Committee for Internal Transport of UNECE
- [2] UN Regulations No. 66, Uniform provisions concerning the approval of large passenger vehicles with regard to strength of their superstructure

UDC 621.396.931:006.354

ICS 43.040.15

Keywords: motor vehicles, test methods, in-vehicle emergency call device/system, rollover angle

Editor *A.V. Pribyvala*
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