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ON STANDARDIZATION, METROLOGY AND CERTIFICATION
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**I N T E R S T A T E
S T A N D A R D**

**GOST
33467-2015**

Global navigation satellite system

**ROAD ACCIDENT EMERGENCY RESPONSE
SYSTEM**

**Functional test methods for in-vehicle emergency call
device/system and data transfer protocols**

**Official Edition
English Version Approved by Interstandard**



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Foreword

The purposes, main principles and basic order of work on interstate standardization are established by GOST 1.0-2015 "Interstate system for standardization. Basic principles" and GOST 1.2-2015 "Interstate System for Standardization. Interstate standards. Rules for development, taking over, renovation and cancellation"

Details

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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
Armenia	AM	Ministry of Economics of Republic of Armenia
Belarus	BY	Gosstandart of Republic of Belarus
Kazakhstan	KZ	Gosstandart of Republic of Kazakhstan
Kyrgyzstan	KG	Kyrgyzstandart
Russian Federation	RU	Rosstandart
Tajikistan	TJ	Tajikstandart

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5 This Standard developed on based GOST R 55530-2013*

6 INTRODUCED FOR THE FIRST TIME

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

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I N T E R S T A T E S T A N D A R D**Global navigation satellite system****ROAD ACCIDENT EMERGENCY RESPONSE SYSTEM****Functional test methods for in-vehicle emergency call device/system and data transfer protocols**

Date of Introduction — 2017—01—01**1 Scope**

This Standard applies to in-vehicle emergency call systems/devices intended for equipping wheeled vehicles of Categories M and N in accordance with the requirements of the Technical Regulation [1].

This Standard defines the methods that shall be used in functional tests of in-vehicle emergency call systems/devices against the requirements of [1] and GOST 33464, and in functional tests of data exchange protocols between such systems/devices and the infrastructure of the road accident emergency response system against the requirements of GOST 33465.

The Standard may be used in conformity assurance tests of in-vehicle emergency call systems/devices as regards the requirements of the Technical Regulation [1].

2 Normative references

The following standards are referred to in this Standard:

GOST 12.1.030-81 Occupational safety standards system. Electric safety. Protective conductive earth, neutralling

GOST 12.3.019-80 Occupational safety standards system. Electrical tests and measurements. General safety requirements

GOST 28751-90 Electrical equipment for vehicles. Electromagnetic compatibility. Electrical disturbance by conduction along supply lines. Technical requirements and tests

GOST 33464-2015 Global navigation satellite system. Road accident emergency response system. In-vehicle emergency call device/system. General technical requirements

GOST 33465-2015 Global navigation satellite system. Road accident emergency response system. Data exchange protocol between In-Vehicle Emergency Call Device/System and Emergency Response System Infrastructure

Note — When using this standard it is expedient to check the validation of the reference standards in the general-use information system — on official site of Federal Agency on Technical regulating and Metrology in Internet or according to the annual information index "National standards" which is published as of January, 1st, of current year, and according to releases of monthly issued information index "National standards" in the current year. If a reference standard which the dated reference is provided to is replaced, it is recommended to use a version of this standard with the above specified year of approval (acceptance). If after the approval of this standard an amendment is inserted in a reference standard which the dated reference is provided to, and this amendment regards the provision referred to, it is recommended to apply this provision without regard to this amendment. 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 engage this reference.

3 Terms and definitions

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

3.1.1 **road traffic accident; RTA:** Event due to vehicle movement along the road or due to vehicle presence on it resulting in deaths or injuries, in damages of vehicles, structures or cargoes, or in property damages of other kind.

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

3.1.3 **data transmission protocol:** Set of rules and conventions that define the contents, format, timing parameters, order and error correction of messages exchanged by network devices.

3.1.4 **in-vehicle emergency call system; IVS:** System supporting the functions of an in-vehicle emergency call device and providing for automatic transmission of vehicle data messages when a road traffic accident or an accident of other kind occurs.

Notes

1 In addition, an in-vehicle emergency call system may be used for manual transmission of vehicle data messages in the case of road accidents or accidents of other type.

2 Categories of vehicles that shall be equipped with in-vehicle emergency call systems are specified in [1].

3.1.5 **road accident emergency response system:** Automated geographically distributed Federal and State Information System that uses the signals of the GLONASS Global Navigation Satellite System and of other active GNSS to provide for prompt collection of data related to road accidents or other emergencies on the motor roads as well as for processing, storage and transmission of such data to emergency services, and to enable access to the said data for the concerned governmental or local authorities, officials, legal and natural persons.

Note — The road 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 European eCall system currently in development, and are harmonised with it in regard to the main functional features (the use of in-band modem as the main data transmission tool, unified content and format of mandatory data transmitted in the MSD for road accidents, uniform procedures for initiation and termination of duplex voice connection with the persons in the vehicle cabin, etc.).

3.1.6 **in-vehicle emergency call device; IVD:** Device used for measurement and evaluation of vehicle coordinates, speed and direction of movement based on the signals from at least two active Global Navigation Satellite Systems, for manual transmission of vehicle data messages when a road accident or an accident of other kind, and for double-talk voice communication with emergency services over mobile communication networks.

Notes

1 In addition, an in-vehicle emergency call device may be used for automatic transmission of vehicle data messages in the case of road accidents or accidents of other type. The types of road accidents detected automatically and the time frames for implementation of the function for automatic transmission of vehicle data in the device are established in [1].

2 Categories of vehicles that shall be equipped with in-vehicle emergency call devices are specified in [1].

3.1.7 **simulator of road accident emergency response system; SS:** Software and hardware complex used in the tests of in-vehicle emergency call systems or devices, and capable of modelling real processes that take place when the communication is established and the data are exchanged between the samples under test and the infrastructure of the road emergency response system, decoding such data, and evaluating electric parameters and functional properties of wireless communication modules included in the samples of in-vehicle emergency call devices and systems under test.

4 Abbreviations

The following abbreviations are used in this Standard:

UIM	—	User Interface Module;
IU	—	Interface Unit;
GLONASS	—	Global Navigation Satellite System of the Russian Federation;
PS	—	Power Supply;
MSD	—	Minimum Set of Data;
RAM	—	Random Access Memory;
OS	—	Operating System;
SW	—	Software;
PC	—	Personal Computer;
OM	—	Operation Manual;
VH	—	Vehicle;
IVDS	—	In-Vehicle Emergency Call Device/System;
OD	—	Operational Documentation;
eCall	—	Emergency Call (European Emergency Response System);
GPRS	—	General Packet Radio Service;
GPS	—	Global Positioning System (GNSS used in the United States of America);
GSM	—	Global System for Mobile communications (global digital standard for cellular mobile communications);
NAD	—	Network Access Device;
PIN	—	Personnel Identification Number (SIM-card authorisation code);
SIM	—	Subscriber Identity Module (SIM-card);
SMS	—	Short Message System;
UMTS	—	Universal Mobile Telecommunications System (European version of the 3G cellular communication system);
USB	—	Universal Serial Bus;
VIN	—	Vehicle Identification Number.

5 Test procedures

5.1 Test item

5.1.1 The test items shall be in-vehicle emergency call systems/devices.

5.1.2 The number of test samples shall be at least three.

5.1.3 For IVDS installed in standard equipment configuration (on the conveyor line of the vehicle manufacturer), the complete delivery set of the IVDS shall be determined by the vehicle manufacturer taking into account the requirements of GOST 33464 (sections 5 and 21).

For IVDS installed in auxiliary equipment configuration (in service/installation centres or at the manufacturer's dealer site, after vehicle production/manufacture), the complete delivery set of the IVDS shall be determined by the IVDS manufacturer in accordance with the requirements of GOST 33464 (sections 5 and 21).

5.1.4 In-vehicle emergency call systems/devices shall be submitted to tests with a SIM-card installed.

5.2 Purpose of tests

The tests shall be aimed at the assessment of IVDS conformity to the functional requirements established in [1] and GOST 33464, and to the requirements established in GOST 33465 for implementation of IVDS data exchange protocols.

5.3 Scope of tests (checks)

The list and order of IVDS tests (checks) in part of conformity to the functional requirements are specified in Table 1.

Note — The order of checks may be changed provided that the test conditions and schedule remain the same.

Table 1 — List and order of IVDS tests (checks) in regard to functional requirements

Parameter to be assessed (property to be checked)	Clause/sub-clause number of test methods
1 Checking MSD transfer in automatic mode	6.1
2 Checking MSD transfer using in-band modem	6.1.1
3 Checking MSD transfer by SMS	6.1.2
4 Checking MSD transfer in manual mode	6.2
5 Checking MSD transfer using in-band modem	6.2.1
6 Checking MSD transfer by SMS	6.2.2
7 Checking that transferred MSD contains valid vehicle location data	6.3
8 Checking that transferred MSD contains data on last known vehicle location as for detection time of RTA event	6.4
9 Checking availability of valid vehicle location data in MSD	6.5
10 Checking that transferred MSD contains vehicle movement direction data	6.6
11 Checking that loud voice communication is possible during emergency call	6.7
12 Checking IVDS status indicators (for IVDS in auxiliary equipment configuration) ¹⁾	6.8
13 Checking IVDS operation in Test mode	6.9
14 Checking IVDS operation in "Service Station" mode (for IVDS in auxiliary equipment configuration) ¹⁾	6.10
15 Checking IVDS operation in "Software Downloading" mode (for IVDS in auxiliary equipment configuration) ¹⁾	6.11
16 Checking UIM (for IVDS in auxiliary equipment configuration) ¹⁾	6.12
17 Checking internal memory of IVDS	6.13
18 Checking operation of IVDS backup battery and power supply	6.14
19 Checking IVDS registration in network	6.15
20 Checking electric power supply and power consumption requirements (for IVDS in auxiliary equipment configuration) ¹⁾	6.16
¹⁾ These checks are mandatory for IVDS in auxiliary equipment configuration and optional for standard systems installed on the assembly line of the vehicle manufacturer.	

The list and sequence of IVDS tests (checks) regarding the conformity to data exchange protocols, availability of backlighting, and protection of the emergency call button from accidental pressing are specified in Table 2.

Table 2 — List and sequence of IVDS tests (checks) in regard to requirements of data exchange protocols

Parameter to be assessed (property to be checked)	Clause number of test methods
1 Checking transfer of SMS command for number setting when SMS is used as redundant data transmission channel (for IVDS in auxiliary equipment configuration) ¹⁾	6.17

Table 2 (continued)

Parameter to be assessed (property to be checked)	Clause number of test methods
2 Checking transfer of SMS command for number setting for test emergency calls (for IVDS in auxiliary equipment configuration) ¹⁾	6.18
3 Checking transfer of SMS command for initiation of emergency call	6.19
4 Checking transfer of SMS command for MSD retransmission	6.20
5 Checking packet transmission of firmware data specific to IVDS type (for IVDS in auxiliary equipment configuration) ¹⁾	6.21
6 Checking that emergency call button is protected from accidental pressing	6.22
7 Checking that backlighting of emergency call button is available	6.23
¹⁾ These checks are mandatory for IVDS in auxiliary equipment configuration and optional for standard systems installed on the assembly line of the vehicle manufacturer.	

5.4 Test conditions

5.4.1 Test conditions and safety measures

5.4.1.1 Each IVDS shall be tested in normal climatic conditions characterised by the following values of climatic factors:

- air temperature: (25 ± 10) °C;
- relative humidity: from 45 to 80 %;
- atmospheric pressure: from 84.0 to 106.7 kPa (from 630 to 800 Hg mm).

5.4.1.2 No IVDS maintenance operations shall be carried out during the tests.

5.4.1.3 The test modes described by the values of external influencing factors are discussed in the respective sections pertaining to test methods.

5.4.1.4 The access to IVDS tests and to processing of measurement results shall only be granted for those technicians who are familiar with the following technical documentation:

- IVDS operation manual;
- this Standard;
- service documentation for testing, control and measuring equipment used in tests;
- safety instructions for tests.

5.4.1.5 The following occupation safety requirements shall apply to the tests:

- the requirements of GOST 12.1.030 and GOST 12.3.019 along with the safety requirements of operating documents for measuring instruments and testing equipment used in the tests shall be observed;
- measuring instruments and testing equipment may not be turned on before their external grounding is connected;

- connection and disconnection of cables, devices and measuring instruments is only permitted when the power of all devices included in the testing apparatus is turned off, and the IVDS is disconnected from all power circuits.

5.4.2 Testing equipment details

5.4.2.1 Table 3 lists testing/auxiliary equipment and measuring instruments used in the IVDS tests.

Table 3 — Testing equipment, auxiliary equipment and measuring instruments for IVDS tests

Designation of equipment	Required specifications of instruments and equipment
1 Test bench	5.4.2.2, Appendix A

Table 3 (continued)

Designation of equipment	Required specifications of instruments and equipment
2 Dummy on-board network	In accordance with GOST 28751
3 Oscilloscope	Frequency band: up to 100 MHz Inaccuracy: not greater than 3 %
4 Electric test gauge	Voltage range: up to 500 V, resistance: 2 MOhm
5 Power supply	Output voltage: from 0 to 30 V, maximum load current: 10 A
6 PC	External interface: USB 2.0
7 Simulator of emergency response system	Functional properties of SS: as per 3.1.14 (e.g., broadband communication RF tester R&S CMW500).
N o t e — The use of equipment of other types is permitted provided that such equipment is capable of ensuring the required accuracy of measurements in the specified range.	

5.4.2.2 Each IVDS shall be tested on a test bench designated for such purpose. The bench shall include:

- system simulator used to configure the IVDS in accordance with GOST 33464 (Appendix A), transmit and receive the required data during the IVDS tests (using an in-band modem, SMS exchanges, or packet data transmission) and to interpret the test results;
- peripheral devices, antennas and other equipment used to simulate the conditions taking place on the intended vehicle board when the IVDS is used.

N o t e s

1 The data structures used when SMS plays a role of redundant communication channel shall comply with GOST 33465.

2 Test benches may be equipped with peripheral devices selected by the IVDS and vehicle manufacturers if such devices ensure the required accuracy of measurements in the specified range.

5.4.2.3 The setup and configuration of the IVDS, as well as the retrieval of its current configuration parameters, shall be performed in accordance with the operation manual.

5.4.2.4 The antennas used to receive GLONASS or GLONASS/GPS satellite signals shall be arranged so that no structural component might obstruct them during the tests, except for the tests where the operational condition of the IVDS is checked.

5.4.3 The test bench shall have a reliable power supply rated for 12 and/or 24 V d.c.

5.4.4 Equipment used in the tests shall be attested, and provided with a certificate of approval valid for the period of tests.

Measuring instruments used in the tests shall be verified (and have either verification certificates, or verification marks applied to the device or stamped in the operating documentation; the verification period thereof shall not expire during the period of tests).

The test conditions shall correspond to typical conditions in working areas where the software and hardware complexes are operated by the personnel.

5.5 Reporting

The test and inspection report compiled basing on the results of the tests (checks) shall include:

- designation, location, telephone, fax and e-mail of testing laboratory (centre);
- identification of item under test;
- test conditions;

- description of test and measurement methods with a reference to this Standard;
- list of testing equipment and measuring instruments used in the tests;
- list of sections of normative documents (technical regulations, GOST, etc.) that contain the requirements to be verified, and the results of conformity assessment regarding each particular requirement;
- conclusion on conformity of item under test to the requirements specified;
- title, name and signature of an employee who completed the tests and measurements;
- title, name and signature of the director of the testing laboratory (centre), affixed with the seal of that laboratory (centre);
- date of tests and measurements; issue date and registration number of the report.

6 Functional test methods

6.1 Checking MSD transfer in automatic mode

6.1.1 Checking MSD transfer using in-band modem

6.1.1.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.1.1.2 Check that the correct telephone number for emergency calls is set in the IVDS.

Note — The telephone number to be used for emergency calls and for MSD transfer by SMS is set by the operator of the road accident emergency response system.

6.1.1.3 Make sure that the IVDS is in ERA mode; switch it to this mode if necessary.

6.1.1.4 Simulate an emergency call in automatic mode.

Note — The IVDS manufacturer shall ensure that the latter operation is technically feasible. Its procedure is defined by the IVDS developer. The IVDS manufacturer shall provide for all appropriate security measures to ensure that this procedure may not be exploited by the end user of the IVDS.

6.1.1.5 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, RTA time, and correct attribute of emergency call activation, i.e., automatic).

6.1.2 Checking MSD transfer using SMS

6.1.2.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.1.2.2 Using the simulator UI, disable data reception by the in-band modem.

6.1.2.3 Make sure that the IVDS is in ERA mode; switch it to this mode if necessary.

6.1.2.4 Simulate an emergency call in automatic mode.

Note — The IVDS manufacturer shall ensure that the latter operation is technically feasible. Its procedure is defined by the IVDS developer. The IVDS manufacturer shall provide for all appropriate security measures to ensure that this procedure may not be exploited by the end user of the IVDS.

6.1.2.5 Check that the voice connection has been established, but no proper data reception by the in-band modem has occurred.

6.1.2.6 Using the simulator UI, check that the following operations have succeeded:

- data received successfully by SMS;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, RTA time, and correct attribute of emergency call activation, i.e., automatic).

6.2 Checking MSD transfer in manual mode

6.2.1 Checking MSD transfer using in-band modem

6.2.1.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.2.1.2 Check that the correct telephone number for emergency calls is set in the IVDS.

6.2.1.3 Power on the IVDS and wait for indication that the IVDS is in ERA mode.

6.2.1.4 Press the "Emergency Call" button on the user interface module of the IVDS.

6.2.1.5 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, RTA time, and correct attribute of emergency call activation, i.e., manual).

6.2.2 Checking MSD transfer using SMS

6.2.2.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.2.2.2 Using the simulator UI, disable data reception by the in-band modem.

6.2.2.3 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.2.2.4 Press the "Emergency Call" button on the user interface module of the IVDS.

6.2.2.5 Check that the voice connection has been established, but no proper data reception by the in-band modem has occurred.

6.2.2.6 Using the simulator UI, check that the following operations have succeeded:

- data received successfully by SMS;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, RTA time, and correct attribute of emergency call activation, i.e., manual).

6.3 Checking that transferred MSD contains valid vehicle location data

6.3.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.3.2 Make sure that the interface on the simulator side has been configured for viewing the results of RTA data reception.

6.3.3 Using the diagnostic software, enter inspection mode of IVDS setup parameters and check that the correct telephone number for emergency calls is set.

6.3.4 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.3.5 Simulate an emergency call in automatic mode.

6.3.6 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, valid information on vehicle location (Vehicle_Location parameter) determined by the GNSS receiver, RTA time, correct attribute indicating that the location data are valid (positionCanBeTrusted set to TRUE) and correct attribute of emergency call activation, i.e., automatic).

Note — If the MSD contains information on previous vehicle locations (recentVehicleLocationN1 and recentVehicleLocationN2 parameters), such information shall also be verified.

6.4 Checking that transferred MSD contains data on last known vehicle location as for detection time of RTA event

6.4.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.4.2 Make sure that the interface on the simulator side has been configured for viewing the results of RTA data reception.

6.4.3 Using the diagnostic software, enter inspection mode of IVDS setup parameters and check that the correct telephone number for emergency calls is set.

6.4.4 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.4.5 Create such conditions where navigation signals cannot be received (e.g., disconnect the GNSS antenna or cover it with a metal hood) and maintain them for 5 min.

6.4.6 Simulate an emergency call in automatic mode.

6.4.7 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle location data, VIN-number and type, energy carrier type, RTA time, correct attribute indicating that the location data are invalid (positionCanBeTrusted set to FALSE), and correct attribute of emergency call activation, i.e., automatic).

Note — If the MSD contains information on previous vehicle locations (recentVehicleLocationN1 and recentVehicleLocationN2 parameters), such information shall also be verified.

6.5 Checking that data on unknown location of vehicle is available in MSD

6.5.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.5.2 Make sure that the interface on the simulator side has been configured for viewing the results of RTA data reception.

6.5.3 Using the diagnostic software, enter inspection mode of IVDS setup parameters and check that the correct telephone number for emergency calls mode is set.

6.5.4 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.5.5 Using the diagnostic software, delete the data on the last location from IVDS memory, and reset all system ephemerides and almanacs present in RAM of the GNSS navigation module.

Note — This step may be skipped if the such information is not present in memory of the IVDS and GNSS module, e.g., is lost after previous power shutdown.

6.5.6 Simulate an emergency call in automatic mode.

6.5.7 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle (coordinates determined by the GNSS receiver), RTA time, and correct attribute of emergency call activation, i.e., automatic).

- MSD decoded successfully (MSD the vehicle VIN-number and type, energy carrier type, correct attribute of emergency call activation, i.e., automatic), 0x7FFFFFFF values transferred for coordinates, and the attribute of location data validity (positionCanBeTrusted parameter) is set to FALSE.

6.6 Checking that transferred MSD contains vehicle movement direction data

6.6.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.6.2 Make sure that the interface on the simulator side has been configured for viewing the results of RTA data reception.

6.6.3 Using the diagnostic software, enter inspection mode of IVDS setup parameters and check that the correct telephone number for emergency calls mode is set.

6.6.4 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.6.5 Simulate an emergency call in automatic mode.

6.6.6 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;

- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, information on vehicle movement direction (Vehicle_Direction parameter), RTA time, correct attribute of emergency call activation, i.e., automatic).

Note — For the purposes of this section, the information on vehicle movement direction may be verified in combination with the tests as per clause 6.3.

6.7 Checking that loud voice communication is possible during emergency call

6.7.1 Apply external power to the IVDS.

6.7.2 Apply the "Ignition" signal to the input of the vehicle ignition line.

6.7.3 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.7.4 Using the oscilloscope, check that the "Disable sound" signal is not present on the output that is used to turn off the vehicle radio recorder.

6.7.5 Using the IVDS diagnostic software, check that the correct telephone number for emergency calls is set in the IVDS.

6.7.6 Press the "Emergency Call" button on the user interface module and check that the duplex voice communication is established.

6.7.7 Using the oscilloscope, check that the "Disable sound" signal is present on the output that is used to turn off the vehicle radio recorder.

6.7.8 Using the simulator UI, hang up the emergency call that has arrived from the IVDS, and check that the duplex voice communication has terminated.

6.7.9 Using the oscilloscope, check that the "Disable sound" signal is not present on the output that is used to turn off the vehicle radio recorder.

Note — For IVDS in standard equipment configuration, availability of loud voice communication providing for shutdown of all audio playback devices and systems during the emergency call is left to the discretion of the vehicle manufacturer. The function for shutdown of other sound sources may be checked using the techniques specified by the vehicle manufacturer, e.g., using diagnostic software.

6.8 Checking IVDS status indicators (for IVDS in auxiliary equipment configuration)

6.8.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.8.2 Apply external power to the IVDS and the "Ignition" signal to the input of the vehicle ignition line.

6.8.3 Check that the IVDS status indicator displays the IVDS operation status for a short time (from 3 to 10 s) as specified in the OM.

6.8.4 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.8.5 Using the IVDS diagnostic software, check that the correct telephone number for emergency calls is set in the IVDS.

6.8.6 Press the "Emergency Call" button on the user interface module.

6.8.7 Check that the IVDS status indicator displays the "Emergency Call" status according to the OM.

6.8.8 Check that the IVDS status indicator displays the "Dial-up in Emergency Mode" status according to the OM.

6.8.9 Check that the IVDS status indicator displays the "MSD Transfer in Emergency Mode" status according to the OM.

6.8.10 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem within 20 s after the start of transfer;
- MSD decoded successfully (MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, RTA time, and correct attribute of emergency call activation, i.e., manual).

6.8.11 Check that the duplex voice communication is established.

6.8.12 Using the simulator UI, hang up the emergency call that has arrived from the IVDS, and check that the duplex voice communication has terminated.

6.8.13 Check that the IVDS status indicator does not display the "Emergency Call" status anymore, in accordance with the OM.

6.8.14 Disable reception of IVDS calls and data by the SS.

6.8.15 Simulate an emergency call in automatic mode.

6.8.16 Check that nothing has changed in the simulator UI for viewing the results of data reception from the in-band modem and for decoding the MSD data.

6.8.17 Check that the IVDS status indicator displays the "Emergency Call Not Possible" status in accordance with the OM.

6.8.18 Turn off external power of the IVDS and disconnect the external GSM/UMTS or GNSS antenna (if the external antenna is included in the IVDS delivery set), or disconnect the microphone from the IVDS (if such disconnection is possible).

6.8.19 Apply external power to the IVDS, or "Ignition" signal to the input of the vehicle ignition line.

6.8.20 Make sure that the IVDS is in ERA mode.

6.8.21 Check that the IVDS status indicator displays the "Fault" status according to the OM.

6.8.22 Remove the "Ignition" signal from the input of the vehicle ignition line, or disconnect external power from the IVDS.

6.8.23 Connect the external GSM/UMTS or GNSS antenna (if the external antenna was disconnected before), or connect the microphone to the IVDS (if it was disconnected earlier).

6.8.24 Apply external power to the IVDS, or "Ignition" signal to the input of the IVDS ignition line.

6.8.25 Make sure that the IVDS is in ERA mode.

6.8.26 Check that the IVDS status indicator does not display the "Fault" status.

6.8.27 Check that the correct telephone number for test calls is set in the ECALL_TEST_NUMBER parameter for the IVDS.

6.8.28 Switch the IVDS to Test mode:

- for IVDS in auxiliary equipment configuration — press the "Additional Functions" button on the user interface module of the IVDS;
- for standard IVDS — use the procedure described in the OM for the system.

6.8.29 Check that the IVDS status indicator displays the "Test Mode" status according to the OM.

6.8.30 Turn off external power of the IVDS, or remove the "Ignition" signal from the input of the ignition line.

6.8.31 Apply external power to the IVDS, and make sure that the IVDS has switched to ERA mode.

6.8.32 Switch the IVDS to Service Station mode in accordance with the OM.

6.8.33 Check that the IVDS status indicator displays "Service Station" status in accordance with the OM.

6.8.34 Exit IVDS Service Station mode in accordance with the OM.

Note — Clauses 6.8.33 — 6.8.35 apply to IVDS in auxiliary equipment configuration only.

6.8.35 Disconnect external power from the IVDS, and discharge the backup battery (if technically feasible) or replace it with the discharged one.

Note — This is done if the backup power supply is available in the IVDS.

6.8.36 Check that the IVDS status indicator displays the "Backup battery discharged below the specified limit" or "Fault" status in accordance with the OM.

6.9 Checking IVDS operation in Test mode

6.9.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.9.2 Make sure that the interface on the simulator side has been configured for viewing the results of data reception on IVDS testing.

6.9.3 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.9.4 Power on the IVDS.

6.9.5 Using the IVDS diagnostic software, check that the correct telephone number ECALL_TEST_NUMBER is set in the IVDS.

6.9.6 Using the IVDS diagnostic software, check that the POST_TEST_REGISTRATION_TIME parameter which defines the network registration period after the completion of tests is set to 5 min. If this is not the case, set the above value for this parameter.

6.9.7 From the IVDS side, send the Test mode request signal by pressing the "Additional Functions" button (for auxiliary equipment configuration only).

Notes

1 For IVDS installed in standard equipment configuration, switching to Test mode from ERA mode should be done from the UI implemented in the vehicle.

2 The instruction that explains how to enter Test mode using the UI shall be prepared in accordance with GOST 33464 (clause 7.6.6) and presented in the User Manual for the vehicle.

6.9.8 Perform the following checks:

- microphone connection;
- speaker (speakers) connection;
- ignition on/off operation;
- extended UIM test;
- sufficient charge level of backup battery (if such check is technically feasible);
- operational condition of automatic detector of RTA events;
- integrity of software image;
- operational condition of GNSS receiver.

6.9.9 Using the simulator UI, check that the MSD containing the test results has been successfully transferred to ECALL_TEST_NUMBER, and this MSD includes valid data.

6.9.10 Make sure that the voice prompt is played or the IVDS indicator displays a proper status when the test is completed.

6.9.11 Turn off external power of the IVDS and disconnect the microphone.

Note — If no diagnostic is possible for microphone disconnection, a fault may be modelled using some other method conforming to the documentation supplied by the manufacturer.

6.9.12 Turn on external power of the IVDS.

6.9.13 Send the Test mode request signal by pressing the "Additional Functions" button (for auxiliary equipment configuration only).

Notes

1 For IVDS installed in standard equipment configuration, switching to Test mode from ERA mode should be done from the UI implemented in the vehicle.

2 The instruction that explains how to enter Test mode using the UI shall be prepared in accordance with GOST 33464 (subsection 7.6.6) and presented in the User Manual for the vehicle.

6.9.14 Using the simulator UI, check that the MSD containing the test results has been successfully transferred to ECALL_TEST_NUMBER, and this MSD includes the fault data.

6.9.15 Check that the user interface module indicates "Fault" status in accordance with the OM.

6.9.16 Using the IVDS diagnostic software, check that the IVS has stopped its network registration after expiration of the timer setting that defines the network registration time in Test mode (POST_TEST_REGISTRATION_TIME parameter).

6.10 Checking IVDS operation in "Service Station" mode (for IVDS in auxiliary equipment configuration)

6.10.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.10.2 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.10.3 Switch the IVDS to "Service Station" mode as described in the IVDS User Guide.

6.10.4 Measure the voltage level on the GARAGE_MODE_PIN physical line and check that this level corresponds to the one declared in the IVDS User Guide.

6.10.5 Press the "Emergency Call" button on the user interface module of the IVDS.

6.10.6 Check that nothing has changed in the simulator UI intended for viewing the results of data reception from the in-band modem and for decoding MSD data.

6.10.7 Exit the IVDS "Service Station" mode as explained in the User Guide.

6.10.8 Measure the voltage level on the GARAGE_MODE_PIN physical line and check that it is equal to zero.

6.10.9 Press the "Emergency Call" button on the user interface module of the IVDS.

6.10.10 Using the simulator UI, check that the MSD has been received and decoded successfully.

The MSD should contain the expected vehicle parameter data, the expected information on geographic location of the vehicle, and the correct attribute of emergency call activation, i.e., manual.

6.11 Checking IVDS operation in "Software Downloading" mode (for IVDS in auxiliary equipment configuration)

6.11.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.11.2 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.11.3 Apply the "Ignition" signal to the input of the vehicle ignition line.

6.11.4 Press the "Additional Functions" button to check that the IVDS registration in the wireless mobile communication network is complete.

6.11.5 Using the simulator UI for transmission of commands to IVDS, send a telematic message requesting the switchover to "Software Downloading" mode.

6.11.6 Make sure that the software downloading is in progress, either by checking the IVDS indication or using the simulator UI.

6.11.7 Press the "Emergency Call" button on the user interface module of the IVDS.

6.11.8 Using the simulator UI, check that the MSD has been received and decoded successfully. The MSD should contain the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, and correct attribute of emergency call activation, i.e., manual.

6.11.9 Check that the message on interruption of software downloading is displayed in the simulator UI when the data reception results are viewed.

6.11.10 Make sure that the IVDS is in ERA mode.

6.11.11 Using the simulator UI for transmission of commands to IVDS, send a telematic message requesting the switchover to "Software Downloading" mode.

6.11.12 Make sure that the software downloading is in progress, either by checking the IVDS indication or using the simulator UI.

6.11.13 Using the IVDS diagnostic software, check that the software image has been loaded into RAM.

6.12 Checking UIM (for IVDS in auxiliary equipment configuration)

6.12.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.12.2 Apply external power to the IVDS.

6.12.3 Make sure that the IVDS is in ERA mode; switch it to ERA mode otherwise.

6.12.14 Press the "Emergency Call" button on the user interface module of the IVDS.

6.12.5 Check that the dial-up has started, and press the "Additional functions" button immediately (before the incoming call is received in the call centre).

6.12.6 Check that the dial-up has stopped and that the IVDS is in ERA mode.

6.13 Checking internal memory of IVDS

6.13.1 Make sure that the IVDS is connected to the test bench as shown in the diagram presented in Appendix A.

6.13.2 Apply external power to the IVDS.

6.13.2 Using the IVDS diagnostic software, make sure that the correct telephone number for SMS transmission is set in the ECALL_SMS_FALLBACK_NUMBER parameter of the IVDS.

6.13.3 Using the IVDS diagnostic software, make sure that the use of GPRS for data transmission is disabled in the IVDS.

6.13.4 Set up the conditions where no IVDS calls or data transmission is possible using wireless mobile communication networks (e.g., disable the reception of IVDS calls and data by the SS).

6.13.5 Press the "Emergency Call" button.

6.13.6 Check that nothing has changed in the simulator UI intended for viewing data reception results.

6.13.7 Check that nothing has changed in the simulator UI intended for viewing SMS data reception results and for decoding MSD data.

6.13.8 Wait for 1 min.

6.13.9 Within at most 2 min, set up the conditions where IVDS calls and data may be transmitted using wireless communication networks (e.g., enable the reception of IVDS calls and data by the SS).

6.13.10 Check that the following operations have succeeded in the simulator UI intended for viewing data reception results:

- data received successfully using the in-band modem;
- MSD decoded successfully (MSD contains the vehicle parameters data, information on geographic location of the vehicle, and correct attribute of emergency call activation, i.e., manual).

Note — If the number of IVS dialup attempts (defined by the ECALL_MANUAL_DIAL_ATTEMPTS parameter) is exceeded in the time period from the moment when the button is pressed to the moment when the reception of data and calls by the SS is enabled, the wait time at steps 6.13.8 and 6.13.9 should be decreased, or the value of the ECALL_MANUAL_DIAL_ATTEMPTS parameter should be increased using the diagnostic software.

6.13.11 Disable the reception of IVDS calls and data by the SS.

6.13.12 Using the IVDS diagnostic software, set the INT_MEM_TRANSMIT_INTERVAL parameter to 1 min.

6.13.13 Simulate three emergency calls in automatic mode at 1 min intervals.

Note — Using different timing parameters in 6.13.14, 6.13.15 and 6.13.17 is permitted if such parameters do not compromise the logics of IVDS operation.

6.13.14 Check that nothing has changed in the simulator UI intended for viewing data reception results.

6.13.15 Check that nothing has changed in the simulator UI intended for viewing SMS data reception results and for decoding MSD data.

6.13.16 Wait for at least 5 min.

6.13.17 Enable the reception of IVDS calls and data by the SS.

- 6.13.18 Using the simulator UI, check that the following operations have succeeded:
- data received successfully three times using SMS;
 - MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, and correct attribute of emergency call activation, i.e., automatic.

6.13.19 Disconnect external power from the IVDS.

6.14 Checking operation of IVDS backup battery and power supply

6.14.1 Apply external power to the IVDS, or "Ignition" signal to the input of the vehicle ignition line of the IVDS.

6.14.2 Make sure that the IVDS is in ERA mode.

6.14.3 Using the IVDS diagnostic software, check that the correct telephone number for SMS transmission ECALL_SMS_FALLBACK_NUMBER is set in the IVDS.

6.14.4 Using the IVDS diagnostic software, check that the following IVDS parameter settings are active: CALL_AUTO_ANSWER_TIME — 120 min, NAD_DEREGISTRATION_TIME — 120 min.

6.14.5 Make sure that the IVDS backup battery is charged completely.

6.14.6 Press the "Emergency Call" button on the user interface module of the IVDS.

Note — If the IVDS does not support its operation from the backup battery during manually initiated calls, an automatic call may be simulated using the diagnostic software instead of pressing the "Emergency Call" button.

6.14.7 Disconnect external power from the IVDS and remove the "Ignition" signal from the input of the vehicle ignition line.

6.14.8 Check that the duplex voice communication is established with the operator, and set the maximum sound level for the speakers connected to the IVDS under test (if the IVDS User Guide specifies how to set the speaker volume).

6.14.9 From the operator side, read out any text for 5 min.

6.14.10 Using the simulator UI intended for connection control, terminate the emergency call that has arrived from a given IVDS.

6.14.11 Leave the IVDS working from the backup battery for 1 hour.

6.14.12 Using the simulator UI intended for connection control, establish voice communication with the IVDS.

6.14.13 From the simulator side, read out any text for 5 min.

Note — The text of such length may also be reproduced from any media where it has been recorded beforehand.

6.14.14 The test shall be deemed successful if the second voice communication has continued for at least 5 min.

Note — If the backup battery is rechargeable, the above requirements shall be checked within 24 h after backup battery charging, at a constant ambient temperature of 20 °C.

6.15 Checking IVDS registration in network

6.15.1 Apply the "Ignition" signal to the input of the vehicle ignition line.

6.15.2 Simulate an emergency call in automatic mode.

6.15.3 Using the simulator UI, check that the following operations have succeeded:

- data received successfully using the in-band modem;
- MSD contains the vehicle VIN-number and type, energy carrier type, information on geographic location of the vehicle, and correct attribute of emergency call activation, i.e., automatic.

6.15.4 Remove the "Ignition" signal from the input of the vehicle ignition line.

6.15.6 Using the IVDS diagnostic software, check that the IVS has stopped its network registration after expiration of the timer setting that defines the network registration time (governed by the parameter NAD_DEREGISTRATION_TIME).

**6.16 Checking electric power supply and power consumption requirements
(for IVDS in auxiliary equipment configuration)**

- 6.16.1 Apply external power to the IVDS, or "Ignition" signal to the input of the IVDS ignition line.
- 6.16.2 Make sure that the IVDS is in ERA mode.
- 6.16.3 Using the IVDS diagnostic software, check that the correct telephone number for SMS transmission is set in the ECALL_SMS_FALLBACK_NUMBER parameter, and that the following settings are active:
- CALL_AUTO_ANSWER_TIME — 5 min;
 - NAD_DEREGISTRATION_TIME — 5 min.
- 6.16.4 Press the "Emergency Call" button on the user interface module of the IVDS.
- 6.16.5 Check that the duplex voice connection with the operator is established.
- 6.16.6 As described in the IVDS User Guide, set the maximum sound level in the speakers connected to the IVDS under test.
- 6.16.7 From the simulator side, read out any text for at least 3 min.
- 6.16.8 Check that the IVDS current consumption does not exceed 1500 mA at 12 V (or 1200 mA at 24 V) during at least 3 min.
- 6.16.9 Using the simulator UI intended for connection control, terminate the emergency call that has arrived from this IVDS, and check that the duplex voice connection with the operator has terminated.
- 6.16.10 Remove the "Ignition" signal from the input of the vehicle ignition line of the IVDS.
- 6.16.11 Check that the IVDS current consumption does not exceed 10 mA for 12 V (24 V) during at least 1 min.

6.17 Checking transfer of SMS command for number setting when SMS is used as redundant data transmission channel (for IVDS in auxiliary equipment configuration)

This check requires the sequence of step-by-step operations listed in Table 4.

Table 4 — Steps used for checking transfer of SMS command for setting SMS data transmission number

Step	Sequence of operations at each step	Check results
1 Initiating transfer of configuration command	Using the software for communication between the IVDS and the system simulator, initiate the transfer of the number setting command for SMS data transmission, set the ID of the IVDS to 00000001, and specify the number for SMS transmission. Wait for confirmation that the SMS with the configuration command has reached the IVDS module	Configuration command used to set the number for SMS data transmission sent from the bench and delivered to the IVDS
2 Receiving confirmation from IVDS on completion of configuration command	Wait for up to 5 minutes for confirmation that the configuration command has been completed. The fact that the confirmation has been received shall be reflected in the system simulator UI	Received the confirmation on the completion of configuration command by IVDS
3 Rebooting IVDS	Reboot the IVDS using the standard procedure	The IVDS rebooted
4 Checking IVDS storage of new number to be used for SMS data transmission	Using the IVDS diagnostic software, connect to the in-vehicle system. Using the IVDS diagnostic software, check that the respective number for SMS data transmission has been stored in the IVDS memory.	New number for SMS data transmission stored in the IVDS.

The result of this check shall be considered positive if the results specified in "Check results" column have been achieved for each step described in Table 4.

6.18 Checking transfer of SMS command for number setting for test emergency calls (for IVDS in auxiliary equipment configuration)

This check requires the sequence of step-by-step operations specified in Table 5.

Table 5 — Steps used for checking transfer of SMS command for setting emergency call number to be used in tests

Step	Sequence of operations at each step	Check results
1 Initiating transfer of configuration command	Using the software for communication between the IVDS and the system simulator, initiate the transfer of number setting command for test calls, set the ID of the IVDS to 00000001, and specify the number. Wait for confirmation that the SMS with the configuration command has reached the IVDS module.	Configuration command used to set the number for test calls sent from the bench and delivered to the IVDS.
2 Receiving confirmation from IVDS on completion of configuration command	Wait for up to 5 minutes for confirmation that the configuration command has been completed. The fact that the confirmation has been received shall be reflected in the simulator UI	Received confirmation on completion of configuration command by the IVDS.
3 Rebooting IVDS	Reboot the IVDS using the standard procedure	The IVDS rebooted
4 Checking IVDS storage for new number to be used for test calls	Using the IVDS diagnostic software, check that the respective number for test calls has been stored in the IVDS memory.	New number for test calls stored in the IVDS.

The result of this check shall be considered positive if the results specified in "Check results" column have been achieved for each step described in Table 5.

6.19 Checking transfer of SMS command for initiation of emergency call

This check requires the sequence of step-by-step operations specified in Table 6.

Table 6 — Steps used for checking transfer of SMS command for initiation of emergency call

Step	Sequence of operations at each step	Check results
1 Initiating transfer of control command	Press the emergency call button on the UI module of the IVDS. Using the system simulator, cancel the emergency call arrived from the IVDS. Using the system simulator, start the transfer of call initiation command specifying the MSISDN of the IVDS SIM-card, 00000001 as the ID of the IVDS, the in-band modem as the MSD transfer transport, and manual emergency call type. Wait for confirmation that the SMS with the control command has been received by the IVDS	Control command for emergency call initiation sent from the simulator and transferred to the IVDS
2 Receiving confirmation from IVDS on completion of control command	In the simulator UI, wait for IVDS conformation that the control command has been completed	Received confirmation on completion of control command by the IVDS.
3 Checking completion of control command by IVDS	Wait for up to 30 s. In the system simulator UI, check that the call from the IVDS has arrived in reply to the request, and the MSD has been transferred using the in-band modem and decoded correctly	In reply to control command, the IVDS made an emergency call and transmitted the MSD using the in-band modem. Flags of manual generation and attribute of emergency call shall be present in the decoded MSD

The result of this check shall be considered positive if the results specified in "Check results" column have been achieved for each step described in Table 6.

6.20 Checking transfer of SMS command for MSD retransmission

This check requires the sequence of step-by-step operations specified in Table 7.

Table 7 — Steps used for checking transfer of SMS command for MSD retransmission

Step	Sequence of operations at each step	Check results
1 Initiating transfer of control command	<p>Press the emergency call button on the UI module of the IVDS.</p> <p>Using the system simulator, cancel the emergency call arrived from the IVDS.</p> <p>Using the system simulator, start the transfer of MSD retransmission command specifying the MSISDN of the IVDS SIM-card, 00000001 as the ID of the IVDS, SMS as the MSD transfer transport, and message serial number (MID), equal to zero.</p> <p>Wait for confirmation that the SMS with the control command has been received by the IVDS module.</p>	Control command for initiation of MSD retransmission via SMS sent from the bench and transferred to the IVDS
2 Checking completion of control command by IVDS	<p>Wait for up to 30 s.</p> <p>In the system simulator UI, check that the MSD generated in reply to the request has arrived and decoded correctly</p>	<p>The IVDS sent the MSD in reply to the control command.</p> <p>The MSD decoded correctly (it contains the vehicle VIN-number and type, type of energy carrier, information on geographic location of the vehicle and on the time of MSD generation)</p>

The result of this check shall be considered positive if the results specified in "Check results" column have been achieved for each step described in Table 7.

6.21 Checking packet transmission of firmware data specific to IVDS type (for IVDS in auxiliary equipment configuration)

This check requires the sequence of step-by-step operations specified in Table 8.

Table 8 — Steps used for checking GPRS transfer of firmware specific for IVDS type

Step	Sequence of operations at each step	Check results
1 Initiating transfer of configuration command	<p>Using the system simulator, initiate the packet transfer of command data for sending an IVDS-specific firmware image, set the ID of the IVDS to 00000001 and indicate the full path to the file of specific firmware image.</p> <p>Wait for confirmation that the configuration command data has been received by the IVDS module using packet transfer, and the transfer of the firmware image file has started</p>	Configuration command for transfer of IVDS-specific firmware image sent from the bench and received by the IVDS

Table 8 (continued)

Step	Sequence of operations at each step	Check results
2 Receiving confirmation from IVDS on completion of configuration command	Wait for confirmation that the uploading of the firmware image to the IVDS is complete. The confirmation shall be displayed in the UI	Confirmation that the transfer of firmware image to the IVDS is complete
3 Rebooting IVDS	Reboot the IVDS using the standard procedure	The IVDS rebooted
4 Checking that IVDS started operating with new firmware image	Using the IVDS diagnostic software, check that the IVDS is functioning under control of the firmware version equal to the version of the firmware image supplied by the IVDS manufacturer	An upgraded firmware image is operating in the IVDS

The result of this check shall be considered positive if the results specified in "Check results" column have been achieved for each step described in Table 8.

6.22 Checking that emergency call button is protected from accidental pressing

6.22.1 Inspect the IVDS user interface module visually and check that the "Emergency Call" button is designed with a protection mechanism preventing from its accidental pressing.

Note — The IVDS manufacturer shall select proper technical implementation for mechanical protection of the "Emergency Call" button from accidental pressing.

6.22.2 Check that the OM for the IVDS includes instructions on switching the "Emergency Call" button to a state ready for emergency calls.

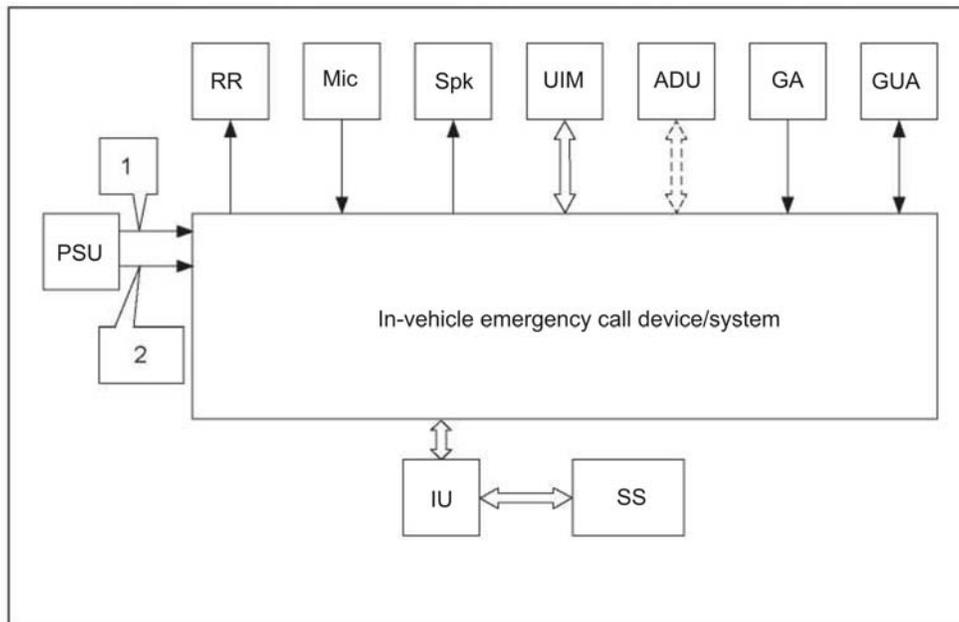
6.23 Checking that backlighting of emergency call button is available

6.23.1 Apply the "Ignition" signal to the input of the vehicle ignition line.

6.23.2 Inspect the IVDS user interface module visually and check that the "Emergency Call" button is equipped with backlighting.

Appendix A
(obligatory)

Block diagram of bench for tests of in-vehicle emergency call system/device



RR — radio recorder of vehicle; Mic — microphone; Spk — speaker; UIM — user interface module; ADU — accident detector unit; GA — GLONASS antenna; GUA — GSM/UMTS antenna; PSU — power supply unit (12/24 V); IU — interface unit; SS — simulator of road accident emergency response system;
1 — power cable; 2 — ignition circuit

Fig. A.1 — Connection diagram for IVDS in auxiliary equipment configuration

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