FEDERAL AGENCY
ON TECHNICAL REGULATING AND METROLOGY

NATIONAL STANDARD OF THE RUSSIAN FEDERATION

GOST R 55532-2013

Global Navigation Satellite System

ROAD ACCIDENT EMERGENCY RESPONSE SYSTEM

Test methods for evaluation of in-vehicle emergency call system conformity to accident detection requirements

Official Edition
English Version Approved by Interstandard

Moscow
Standartinform
2014

Foreword

1 DEVELOPED by Non-Profit Partnership "Promotion of Development and Use of Navigation Technologies" (NP "GLONASS")

2 SUBMITTED by Technical Committee for standardization TC 363 "Radio navigation"

3 APPROVED AND INTRODUCED by Decree No. 597-*cm*, dated 28.08.2013, of the Federal agency on technical regulating and metrology

4 This Standard takes into account the basic provisions of the following world-wide documents:

UNECE Regulations establishing uniform procedures related to official approval of passenger vehicles of Categories M and N in regard to protection of drivers and passengers in collisions of various types

5 INTRODUCED FOR THE FIRST TIME

The rules of this standard application are established in GOST R 1.0-2012 (*section 8). Information on the amendments to this standard is published in the annual (as of January, 1st, of the current year) information index «National standards» and the official text of the amendments and corrections is published in the monthly information index «National standards». In case of revision (replacement) or cancellation of this standard an appropriate notice will be published in the nearest release of the monthly issued information index «National standards». The appropriate information, notice and texts shall also be placed in the general-use information system — on official site of Federal Agency of Technical regulating and metrology in Internet (gost.ru)*

Contents

Introduction

The development of the ERA-GLONASS emergency response system is intended to mitigate the consequences of road accidents and of other emergencies on the roads of the Russian Federation by reducing the response time of emergency services.

An in-vehicle emergency call system (IVS) is a key structural element of ERA-GLONASS used for generation and transmission of the minimum required set of vehicle data when a road accident occurs, as well as for establishing and maintaining duplex voice communication with emergency services.

The automatic evaluation of the accident time on a vehicle is one of the most important IVS functionality requirements specified in the Technical Regulation "On Safety of Wheeled Vehicles" of the Customs Union [1]. According to this Regulation, each IVS installed on Category M1 and N1 vehicles shall ensure that the minimum set of data is transmitted automatically after one or several airbags operate, or when a signal is received from one or several sensors that belong to other components of a passive safety system, or to other vehicle systems.

The most complicated solutions are those implementing automatic accident detection algorithms based on such data that arrive from automatic detectors of RTA events directly. As a rule, the most important functional element of such detectors is a 3D acceleration sensor. The criteria of automatic IVS actuation used in this case must, with a high degree of credibility, be bound to events where a substantial risk to life and health of persons occupying the vehicle cabin is expected.

The requirements for automatic actuation of the IVS systems considered in this Standard and the recommended implementation method of algorithms used for accident severity assessment are described in GOST R 54620.

N A T I O N A L S T A N D A R D O F T H E R U S S I A N F E D E R A T I O N

Global navigation satellite system

ROAD ACCIDENT EMERGENCY RESPONSE SYSTEM

Test methods for evaluation of in-vehicle emergency call system conformity to accident detection requirements

Date of Introduction — 2014—01—01

1 Scope

This Standard applies to in-vehicle emergency call systems manufactured in auxiliary equipment configuration, equipped with an automatic detector of RTA events and intended for installation on vehicles of Category M1.

This Standard defines the methods that shall be used in tests of above in-vehicle systems in order to verify their conformity to the accident detection requirements established in GOST R 54620 and [1].

The Standard may also be used in tests of in-vehicle emergency call systems manufactured in standard equipment configuration and intended for vehicles of Category M1, as well as in tests of in-vehicle emergency call systems intended for installation on vehicles of Category N1 and equipped with an automatic detector of RTA events.

2 Normative references

The following standards are referred to in this Standard:

GOST R 8.568-97 State system for ensuring the uniformity of measurements. Verification of testing equipment. General principles

GOST R ISO 5348-2002 Vibration and shock. Mechanical mounting of accelerometers

GOST R ISO 8568-2010 Shock testing machines. Declaration and verification of characteristics

GOST R 51672-2000 Metrological ensuring of product testing for the assurance of conformity. General principles

GOST R 52721-2007 Traffic control devices. Test methods for roadside barriers

GOST R 52767-2007 Automobile roads of the general use. Road facilities. Methods for determination of parameters

GOST R 54620-2011 Global navigation satellite system. Road accident emergency response system. In-vehicle emergency call system. General technical requirements

GOST R 55530-2013 Global navigation satellite system. Road accident emergency response system. Functional test methods of in-vehicle emergency call system and data transfer protocols

Official Edition

GOST R 55534-2013 Global navigation satellite system. Road accident emergency response system. Test methods for navigation module of in-vehicle emergency call system

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 18321-73 Statistical quality control. Item random sampling methods

GOST 30630.0.0-99 Environment stability test methods for machines, instruments and other industrial products. General requirements

N o t e — 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, definitions, designations and abbreviations

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

3.1.1 **in-vehicle emergency call system;** IVS: System installed on a wheeled vehicle of a relevant Category and used to evaluate vehicle location, speed and movement direction data based on the signals generated by the GLONASS Global Navigation Satellite System (GNSS) either alone or in cooperation with other active GNSS, to transmit messages containing vehicle data in automatic mode when a road accident or an accident of other type occurs, as well as to establish and maintain duplex voice communication with emergency services over wireless mobile communication networks.

N o t e :

1 In-vehicle emergency call systems are intended for Category M1 or N1 vehicles of permitted design weight less than 2.5 t.

2 In case of road accidents or accidents of other type, in-vehicle emergency call systems may also be used to transmit vehicle data messages in manual mode.

3.1.2

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

[GOST R 54620-2011, clause 3.1.3]

3.1.3

automatic detector of RTA events; ADR: Device intended for identification of RTA occurrences based on processing of the data arriving from a 3D acceleration sensor included in it, as well as for supplying external devices with the data used to record the acceleration profile during the RTA and/or to assess the RTA severity or to determine the accident type.

N o t e — For vehicles of Category M1, automatic detectors of RTA events may be included in a standard vehicle system that is responsible for recording the acceleration profile for the RTA and/or assessing the RTA severity.

[GOST R 54620-2011, clause 3.1.4]

3.1.4 **simulation tests:** IVS tests performed using an emergency simulator.

3.1.5 **emergency simulator:** Hardware and software tool intended for storage and reproduction of a reference set of vehicle acceleration data during the RTA, and for transmission of that set to the IVS.

3.1.6

potential damage index for RTA (ASI_{15}): Indicator of potential acceleration overload effects due to the RTA on persons occupying the vehicle.

[GOST R 54620-2011, clause 3.1.6]

3.1.7

minimum set of data (MSD): Set of data transmitted by the in-vehicle emergency call system in case of an RTA, including: location and movement parameters of the affected vehicle, RTA time, vehicle VIN-code and other information necessary for emergency response.

[GOST R 54620-2011, clause 3.1.8]

3.1.8 **mounting plate:** Special tool intended for installation and interconnection of an item under test (either an IVS with a built-in ADR, or a standalone ADR) on the shock bench in order to simulate actual conditions wherein that item is fastened to a vehicle.

3.1.9 **field tests:** IVS tests using a vehicle of the respective category where the IVS item under test is mounted.

3.1.10 **bench tests:** Tests on a special bench suitable for application of impact loads to an item under test (either an IVS with a built-in ADR, or a standalone ADR).

3.1.11 **overlap (in percents):** Percentage of the vehicle width subject to external impacts from the barrier.

N o t e — The vehicle width is a distance between two planes that are parallel to the lateral median plane of that vehicle and touching the vehicle from both sides of the latter plane, excluding the rear-view windows, side marker lamps, tyre pressure indicators, turn indicators, marker lamps, elastic mud guards, and the deformable part of tyre side-walls immediately above the point of contact with the road [3].

3.1.12

shock bench: Device that allows exposing a test item to controllable and reproducible mechanical shocks.

N o t e — The shock bench may be a special-purpose device that creates impact actions owing to the potential energy of the gravity field or of the working environment (mechanism), or a vibration bench, either of electrodynamic or hydraulic type, operating in impact mode.

[GOSN R ISO 5568-2010, clause 3.3]

3.1.13

vehicle; VH: Land-based wheeled mechanical device of Category M or N intended for transportation of people, cargoes or equipment loaded on it, along the public automobile roads.

[GOST R 54620-2011, clause 3.1.15]

3.1.14 **ERA-GLONASS system emulator:** Hardware and software complex used in IVS tests which is capable of simulating real processes that take place when the communication is established and the data are transferred between the IVS and the ERA-GLONASS infrastructure, of decoding such data, and of evaluating electrical parameters and functional properties of wireless communication modules of the IVS.

3.1.15 **reference set of data:** Data array containing the values of acceleration recorded along the three vehicle axes (longitudinal, transversal and vertical) of a vehicle at a rate of at least 100 Hz and for a period not less than 3.5 s before the RTA and 3.5 s after the RTA, such that the collision conditions are known and the ASI_{15} indices have been calculated for them.

3.2 The following designations and abbreviations are used in this Standard:

FRC — Frequency Response Channel;
g — Gravity Acceleration, taken equal to 9.81 m/s^2.
GLONASS — Global Navigation Satellite System of the Russian Federation;
GPS — Global Positioning System used in the United States of America;
OD — Operating Documents;
OM — Operation Manual;
TL — Testing Laboratory;

4 General

4.1 The tests are aimed at the assessment of IVS conformity to the requirements established in GOST R 54620 and [1] in regard to proper detection of accidents (accident events) by an in-vehicle system, either in automatic mode, or based on information arriving from the ADR.

4.2 The item under test shall be an IVS system intended for installation on vehicles of Category M1 and manufactured in auxiliary equipment configuration.

Such systems include those designed basing on the requirements of GOST R 54620, and installed on vehicles either in service (installation) stations or at the site of the vehicle manufacturer or the dealer thereof after the vehicle had left the primary assembly production line (had been manufactured).

4.3 The IVS samples submitted to tests shall be selected by an authorised representative of the testing laboratory (certification body) from a batch of finished products that has been accepted by the manufacturer's QC. Sampling results shall be recorded in the Act compiled in accordance with the form shown in Appendix A.

4.4 Three IVS samples shall be delivered for tests, equipped and completed as per GOST R 54620 (sections 5 and 21, respectively).

Where justified, the number of samples may be changed (increased or decreased) as agreed with the testing laboratory (certification body).

4.5 One of the IVS samples submitted to tests shall be installed on a vehicle.

4.6 Whenever the IVS included in part of the vehicle is tested, the IVS mounting location shall be agreed with the vehicle manufacturer.

The details regarding the mounting location and the procedure used to install the IVS on the vehicle shall be reflected in the IVS documentation stated in GOST R 54620 (subsection 21.2).

4.7 Along with the document package specified in GOST R 54620 (subsection 21.2), a general technical description of the IVS type shall be presented for tests, subject to development taking into account the requirements of [2 (clause 4 (Appendix 12))].

The data to be reflected in the general technical description of the IVS as regards the tests of vehicle capability to detect accident events are listed in Table 1.

T a b l e 1 — In-vehicle emergency call system data included in general technical description of IVS type

Section title of general technical description of IVS type[1)]	Information to be included
1 Basic identification	1 Trade name, model (mark), modification (if any) 2 Marking of IVS and of its components in accordance with GOST R 54620 (clause 6.2.1)
2 Applicant	Designation and address of a company submitting the IVS to tests
3 Manufacturer	Designation and address of a company that manufactured the IVS
4 Intended use	List of vehicles (mark, trade name, type, category) targeted for installation of the IVS
5 Completeness	In accordance with GOST R 54620 (subsections 8.7 and 21.1)

Table 1 (continued)

Section title of general technical description of IVS type[1)]	Information to be included
6 Short description of IVS operating (functioning) principle	In accordance with GOST R 54620 (section 7); applicable to IVS in auxiliary equipment configuration[2)]
7 Accident types detected by IVS	In accordance with GOST R 54620 (clause 6.2.1)
8 Supported functions	1 RTA severity assessment; used RTA severity factors and their values. 2 Acceleration profile recording and transmission[3)]. 3 Vehicle path recording and transmission in case of RTA. 4 If possible, shutdown of any audio playback devices and systems normally installed in vehicle cabin (compartment) when the "Emergency call" mode becomes active.
9 Signal sources for automatic actuation of IVS (initiation of "Emergency call" mode)	In accordance with the requirements of GOST R 54620 (clause 7.5.2)[4)] and [1 (clause 17.2.1 (Appendix 3))]: - signal from acceleration sensor; - emergency signals from on-board systems installed on vehicle[5)].
10 Criterion (criteria) of automatic actuation of IVS[6)]	1 Basic rule governing automatic actuation of the IVS; 2 Designation and numeric value of the parameter leading to initiation of "Emergency call" mode when such value is reached; 3 Other information required to understand the implemented mechanism of automatic actuation of the IVS in case of accidents or other emergencies.
11 Automatic detector of RTA events	1 Range of accelerations measured along the vehicle axes; 2 Acceleration measurement accuracy; 3 Sampling rate, Hz.
12 Design features, and specific requirements for mounting (installation) on vehicle	1 ADR design (built into IVS/external to IVS). 2 Any special devices required for IVS (ADR) fastening to vehicle parts and any specific installation instructions in the OD for the IVS. 3 Any restrictions on IVS or ADR alignment during installation on the vehicle, and their description in the OD for the IVS. 4 Any required adjustment (calibration) of ADR after its installation on the vehicle, presence of instructions for such works in the OD for the IVS. 5 Any works required to check correct ADR installation and later IVS performance, presence of instructions for such works in the OD for the IVS.
13 Weight and dimensional parameters	Weight and mounting dimensions (width, height, depth) of IVS components included in delivery set

[1)] The general technical description of the IVS type may include other information in addition to the one listed in Table 1; the applicant is free to select it for inclusion in that document as required.

[2)] The reference to GOST R 54620 (section 7) and to accompanying operating documents for the IVS (document title and designation, section title) is permitted in the included information if the basic IVS operating modes and the rules of IVS switching to the respective states strictly conform to the requirement of GOST R 54620 (section 7). Otherwise, this section shall outline the relevant features (e.g., additional requirements for transition from one state to another) implemented in the IVS under test.

[3)] According to GOST R 54620 (clause 6.8.1), this function is mandatory for those IVS in auxiliary equipment configuration that do not support RTA severity assessment.

[4)] Information on the signals that are used for automatic actuation of the IVS shall be accompanied with the values of the respective setup parameters as indicated in GOST R 54620 (clause 7.5.2 and Table A.1 of Appendix A).

Table 1 (continued)

[5] This concerns those vehicle systems stated in [1 (clause 17.2.1 (Appendix 3))] that do not belong to passive safety systems of the vehicle. As agreed with the vehicle manufacturer, the signal sources may include airbag actuation sensors or sensors installed in other passive safety systems.

[6] Where the acceleration sensor is used as a source of signals for automatic actuation of the IVS, the criterion of automatic actuation shall be as per GOST R 54620 (clause 6.2.3).

4.8 The following shall be provided for IVS samples submitted to tests:

- access to setup parameters indicated in GOST R 54620 (Table A.1 (Appendix A));
- software and hardware solutions for reading and clearing non-volatile IVS memory in accordance with the requirements of GOST R 54620 (clause 6.11.10);

4.9 The following test types shall be used to check the IVS is capable to detect RTA events in automatic mode:

- bench tests;
- simulation tests;
- field tests.

5 Scope and conditions of tests

5.1 The scope and recommended order of IVS tests (checks) in regard to the requirements established for automatic detection of RTA events are specified in Table 2.

Table 2 — Scope of IVS tests (checks)

Designation of test (check)	Test method
Checking delivery set completeness of in-vehicle emergency call system	6.1
Examining technical documentation for in-vehicle emergency call system	6.2
Verifying detection of true emergency events	6.3
Checking resistance of in-vehicle emergency call system to false actuations	6.4
Checking conformity of RTA severity calculation algorithm to established requirements	6.5
Checking automatic RTA event detection capabilities of in-vehicle emergency call system in field tests	6.6

5.2 The IVS parameters and functional properties subject to verification shall be inspected in the following standard conditions:

- ambient temperature: (25 ± 10) °C;
- relative humidity: from 45 % to 80 %;
- atmospheric pressure: from 84 to 106.7 kPa (from 630 to 800 Hg mm).

Note — Conditions of IVS field tests shall comply with the requirements specified in the relevant UNECE Regulations [3], [4], and [5].

5.3 During the tests, the IVS may be exposed to temperatures within the range of operating temperatures defined in GOST R 54620 (subsection 13.2):

- maximum operating temperature: 85 °C;
- maximum operating temperature: minus 40 °C.

5.4 Table 3 lists the testing and auxiliary equipment as well as the measuring instruments used for IVS tests.

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

Designation of testing tool	Required specifications and functional features
Shock testing machine	1 Functional properties: as per GOST R ISO 8568 2 Dynamic properties of shock generation in a single plane: - upper limit of generated acceleration: not less than 30 g; - minimum pulse duration: not greater than 10 ms; - duration of preset dynamic impact: not less than 50 ms; 3 Acceleration generation inaccuracy: not greater than 3 %.
ERA-GLONASS System emulator	Functional properties: in accordance with 3.1.14.
Emergency simulator	Functional properties: in accordance with 3.1.5
Simulator of GNSS signals[1)]	1 Basic engineering and metrological specifications: in accordance with GOST R 55534 (Appendix B) 2 Basic parameters of simulation script for vehicle acceleration up to maximum speed: in accordance with GOST R 55534 (Table C.1 (Appendix C))
Reference acceleration sensor (accelerometer)[2)]	1 3D-acceleration measuring sensor corresponding to requirements of [6], Class КЧХ60 or FRC 180; 2 Inaccuracy of acceleration measurements along vehicle axes: not greater than 3 %.
Mounting plate[3)]	1 Functional properties: in accordance with 3.1.7; 2 Structural design, and material used to fabricate the mounting plate, shall be as close as possible to those of the vehicle element where the IVS or ADR will be mounted on. 3 The plate shall have a clearly distinct mark corresponding to the "forward" direction of vehicle movement. 4 The plate shall provide for aligning (orienting) an item under test at a step of 5° within the range ±90° with respect to the "forward" direction. 5 Structural design and overall dimensions of the mounting plate shall be suitable for its installation on the work desk (carriage) of the shock bench.
[1)] The simulator of GNSS signals is used where the reception of real GNSS signals by the IVS under test can not be ensured during the tests indicated in section 6. [2)] The accelerometer shall be installed on the desk (carriage) of the shock bench or on the vehicle in accordance with the requirements of GOST R ISO 5348. [3)] The length of cables used for connection of test items (IVS or ADR) on the mounting plate in accordance with the connection diagram of Fig. B.1 (Appendix B) shall be selected making allowance for work travel of the desk (carriage) of the shock bench. Note — The components and properties of the testing/auxiliary equipment and measuring instruments selected for IVS field tests shall conform to the requirements of the relevant UNECE Regulations [3], [4], and [5].	

5.5 Metrological support of tests shall comply with the requirements of GOST R 51672.

5.6 Testing equipment shall be certified as per GOST R 8.568 and provided with a certificate of approval valid for the period of tests.

5.7 Measuring instruments shall be of an approved type, and shall be verified (and have either verification certificates, or verification marks applied to the device; the verification period thereof shall not expire during the period of tests).

5.8 Safety requirements for tests

5.8.1 The IVS parameter measurements during the tests shall be carried out in accordance with the requirements of GOST 12.1.030 and GOST 12.3.019, as well as with the safety requirements of [2] and of operating documents for the measuring instruments and testing equipment used in the tests.

5.8.2 Measuring instruments and testing equipment may be turned on only after their external grounding is connected. Connection of protective grounding clamps to the grounding grid shall be made prior to other connections, and disconnection thereof, after any other disconnections.

Connection and disconnection of cables, devices and measuring instruments to the IVS under test is only permitted when the power for all devices included in the testing apparatus is turned off, and the IVS is disconnected from power circuits.

N o t e — The safety of IVS field tests shall be ensured in accordance with the requirements of the relevant UNECE Regulations [3], [4], and [5].

5.9 Reporting test results

5.9.1 A test and measurement report shall be compiled based on the results of each test (check) listed in Table 2. The report shall include the following information:

- designation, location, telephone, fax and e-mail of testing laboratory (centre);
- identification of item under test;
- test conditions;
- description of test and measurement techniques in accordance with this Standard;
- list of testing equipment and measuring instruments used in tests;
- list of sections (subsections, clauses and sub-clauses) of Technical Regulation [1], UNECE Regulations [3], [4], and [5] and/or GOST R 54620 as well as of other normative documents that contain the requirements the conformity was checked against, and conformity assessment results pertaining to each particular requirement;
- conclusion on conformity of the IVS under test to the requirements specified;
- title, name and signature of employee who completed the tests and measurements;
- title, name and signature of director of test laboratory (centre), affixed with the seal of that laboratory (centre);
- date of tests and measurements, issue date, and report registration number.

6 Test methods for evaluation of in-vehicle emergency call system conformity to accident detection requirements

6.1 Checking delivery set completeness of in-vehicle emergency call system

6.1.1 The completeness of IVS delivery sets submitted to tests shall be checked by comparison with the one established in GOST R 54620 and described in the general technical description of the IVS type (see.4.7).

6.1.2 Special attention during this check shall be paid to the requirements of GOST R 54620 (subsection 8.7) regarding the availability of mounting elements (devices) used to secure the following items to structural components of the vehicle:

- ADR, if the ADR is not installed in the IVS unit;
- IVS, if the ADR is installed in the IVS unit.

6.1.3 The IVS shall be deemed to have passed the check if it meets the requirements of GOST R 54620 (subsections 8.7 and 21.1), and a logo conforming to the requirements of GOST R 54620 (section 22) has been applied to its "Emergency Call" button.

6.2 Examining technical documentation for in-vehicle emergency call system

6.2.1 The following shall be checked during this examination:

a) operating documentation package supplied with the IVS is complete, to be checked against the requirements of GOST R 54620;

b) information included in documents presented by the applicant is sufficient for IVS tests, to be checked against the requirements of Technical Regulation [1] and GOST R 54620.

6.2.2 When the completeness of the OD is checked, it shall be ensured that the documentation presented for the tests corresponds to the requirements of GOST R 54620.

The IVS shall be deemed to have passed the examination if the contents of the document package delivered for the tests meet the requirements of GOST R 54620 (subsection 21.2), whereas the presentation form of this package, the requirements of GOST R 54620 (section 22).

6.2.3 When the presence of sufficient information is assessed as per item b) of 6.2.1, it shall be checked that the operating documentation and the general technical description of the IVS type include the data confirming that the software and hardware solutions have been implemented by the IVS manufacturer in regard to accident detection requirements, and enabling the checks of conformity to those requirements.

The IVS shall be deemed to have passed the check as per 6.2.3 if the operating documentation and the general technical description of the IVS type contain the information that specifies (reflects):

- basic identification attributes of the IVS;
- intended use of the IVS, in regard to available list of those vehicles (mark, trade name, type, category) that are targeted for installation of IVS;
- accident types detected by the IVS, and supported IVS functions;
- signal sources for automatic actuation (initiation of "Emergency call" mode) of the IVS and criteria for automatic actuation of the IVS;
- mandatory use of proprietary devices for fastening of the IVS (ADR) to vehicle elements; availability of installation guidelines in the OD for the IVS
- restrictions on IVS or ADR alignment during their installation on vehicle; description of such restrictions in the OD for the IVS;
- any required automatic or manual adjustment (calibration) of the ADR after its installation on the vehicle; availability of instructions for such works in the OD for the IVS;
- any works required to check correct ADR installation and subsequent IVS performance; availability of instructions for such works in the OD for the IVS.

6.3 Verifying detection of true emergency events

6.3.1 These tests are intended for validation of the IVS capability to detect accident events according to the requirements of GOST R 54620 (subsection 6.2) and Technical Regulation [1], and to recognise the accident type (frontal (head-on) collision, side collision, rear shock) as per GOST R 54620 (clause 6.2.1).

N o t e s

1 The above refers to the requirements specified in [1 (sub-clause 17.2 of Appendix 3 and clause 118 of Appendix 10)] for automatic actuation of the IVS in response to a signal from sensors of those accident detection systems (devices) that do not belong to passive safety systems of the vehicle.

2 The term "frontal collision" as defined in GOST R 54620 (subsection 6.2) is hereinafter accompanied with its synonym "head-on collision" used in [3].

6.3.2 The tests shall be carried out using a shock testing machine and a mounting plate installed on it, see Table 3.

6.3.3 The test item (IVS or ADR) to be arranged on the mounting plate and bench-tested on the shock testing machine shall be identified basing on the analysis of IVS design features (see clause 11 of Table 1).

6.3.2 *Test procedure*

6.3.4.1 Select one of the following orientations to secure the mounting plate to the work desk (carriage) of the shock testing machine in accordance with the requirements of GOST R ISO 8568 and GOST 30630.0.0 and of guidelines presented in the documentation:

a) direction of shock created by shock testing machine is opposite to "forward" movement direction of vehicle (frontal (head-on) collision);

b) direction of shock created by shock testing machine is perpendicular to "forward" movement direction of vehicle (side collision);

c) direction of shock created by shock testing machine coincides with "forward" movement direction of vehicle (rear shock);

d) direction of shock created by shock testing machine deviates by 20° from the one opposite to "forward" movement direction of vehicle (frontal (head-on) collision with overlap);

e) direction of shock created by shock testing machine deviates by minus 20° from the one opposite to "forward" movement direction of vehicle (frontal (head-on) collision with overlap).

N o t e s

1 A mark applied to the mounting plate (see Table 3) is used to align the plate on the shock bench.

2 The vehicle coordinate system shall be selected as per [3].

3 To create shocks indicated in items d) and e), the mounting plate, before its securing to the shock bench, is turned around by the required angle relative to the "forward" movement direction using the mark present on it.

6.3.4.2 Attach the reference sensor to the shock bench, in accordance with the requirements of GOST R ISO 5348 and GOST 30630.0.0 (section 5).

6.3.4.3 Install the IVS on the mounting plate following the IVS installation and setup guide and taking into account the IVS orientation with respect to the mark that has been applied to the mounting plate in order to indicate the "forward" direction of the vehicle.

N o t e — The IVS with a built-in ADR is hereinafter considered as an item under test.

6.3.4.4 Assemble the test circuit shown in Fig. B.1 (Appendix B) and apply external power corresponding to the power supply voltage of the on-board network of the vehicle.

6.3.4.5 Complete any required adjustment (calibration) operations for the ADR according to post-installation instructions of the IVS installation and setup guide.

N o t e — The IVS shall be in passive mode as per GOST R 54620 (section 7) during the adjustment.

6.3.4.6 Check that the CRASH_SIGNAL_INTERNAL and CRASH_SIGNAL_EXTERNAL setup parameters related to IVS automatic actuation signals as well as the ASI15_TRESHOLD parameter have the values specified in the general technical description of the IVS type (section 9 of Table 1).

N o t e — The names and values of IVS setup parameters are hereinafter specified in accordance with GOST R 54620 (Appendix A).

6.3.4.7 Check that the "Emergency call" mode and all IVS functions related to the Base Service of the ERA-GLONASS System are enabled (the ECALL_ON parameter value is set to TRUE as per GOST R 54620 (Table A.1 (Appendix A)).

6.3.4.8 Switch the IVS to ERA mode as described in the OD. Check that the IVS status indicator behaves as required in [1 (clause 16.6 (Appendix 3))] when the ignition (start-up) switch is turned on.

6.3.4.9 Prepare the simulator of GNSS signals according to its OM, and start the simulation script indicated in Table 3 selecting the simulation mode of GLONASS and GPS combined constellation signals as per GOST R 55534 (subsection 5.8).

6.3.4.10 Power on the vehicle audio-system simulator included in the bench (see Fig. B.1 of Appendix B) and configure it for sound program playback.

N o t e — Depending on available technical capabilities, the sound program playback may employ radio or optical media for storage of digital sound recordings.

6.3.4.11 Check that the interface for viewing the processing results of the received RTA data is configured on the ERA-GLONASS emulator side.

6.3.4.12 Check that the IVS is usable by initiating the emergency call using the "Emergency Call" button on the UIM of the IVS (see Fig. 6 (Appendix B)) and verifying that the MSD transfer is possible for manual actuation in the case of an RTA event, as required GOST R 55530 (subsection 6.2).

6.3.4.13 Expose the powered IVS to a single mechanical shock which shall have the following impact properties:

a) peak acceleration: not less than 24 g, but not greater than 35 g;

b) duration of shock action when the acceleration created along the shock direction exceeds 24 g: greater than 40 ms (50 ms is the preferred value).

6.3.4.14 Analyse the results of measurements obtained using the reference accelerometer and processed as per [6] to confirm that the required impact properties have been achieved during the test.

6.3.4.15 Check that the status indicator on the UIM of the IVS notifies on the completion of MSD transfer in emergency call, as required in GOST R 54620 (subsection 8.9) and stated in the OD for the IVS.

6.3.4.16 Check that sound reproducing devices installed as standard on the vehicle turn off during emergency calls, if such function is implemented in the IVS under test and included in the general description of the IVS type in accordance with 4.7.

6.3.4.17 Using the ERA-GLONASS emulator UI and following GOST R 55530 (clause 6.1.1), check that the emergency message has arrived while the transmitted MSD has been generated correctly and conforms to the requirements of GOST R 54620 (Appendix C) including those pertaining to relevant identifier values used in automatic actuation of the IVS as per GOST R 54620 (clause 9.1.2).

6.3.4.18 Using the ERA-GLONASS emulator UI, check the MSD transmitted by the IVS to confirm that its CrashDef parameter describing the accident type as per GOST R 54620 (Appendix C) has a value corresponding to the one listed in Table 4 for the accident type simulated in accordance with 6.3.4.1.

Table 4 — Correspondence between accident type detected by IVS and direction of shock impact simulated in tests

Direction of shock created by shock testing machine as per 6.3.4.1	CrashDef parameter value as per GOST R 54620 (Table C.2 (Appendix C))
Opposite to "forward" direction of vehicle movement (frontal (head-on) collision)	crashFront
Perpendicular to "forward" direction of vehicle movement (side collision)	crashSide
In "forward" direction of vehicle movement (rear shock)	crashRear
At 20° to the right with respect to "forward" direction of vehicle movement (frontal (head-on) collision with overlap)	crashFront
At 20° to the left with respect to "forward" direction of vehicle movement (frontal (head-on) collision with overlap)	crashFront

6.3.4.19 If the IVS supports the RTA severity assessment function, check that the RTA severity assessment is included in the transmitted MSD as additional data, in accordance with GOST R 54620 (Appendix C). In this case, the SevereCrashEstimation parameter value shall be TRUE as required in GOST R 54620 (Table C.2 (Appendix C)) to indicate a severe accident given the impact parameters of the shock created in the test.

6.3.4.20 If the IVS supports the acceleration profile transmission function, use the ERA-GLONASS emulator UI to request the transmission of such profile from the IVS through a wireless mobile communication channel established when the IVS has actuated automatically.

N o t e — The acceleration profile recording function is mandatory for those IVS that do not support the RTA severity assessment function.

6.3.4.21 After the response message from the IVS is received in packet transmission mode, check that the highest acceleration value determined by the IVS and included in the transmitted data corresponds to the readings of the reference sensor within the tolerance limit of 10 % as per GOST R 54620 (clause 6.8.4).

Check that the duration and rate of acceleration profile recordings meet the requirements stated in GOST R 54620 (section 6.8.2—6.8.4).

6.3.4.22 Include the results of the tests as per 6.3.4.1—6.3.4.21 in the test report.

6.3.4.23 Change the mounting plate direction on the shock bench to the next one taken from 6.3.4.1 in order to create the respective shock impact, and repeat the tests as per 6.3.4.2—6.3.4.22 for each direction of shock in succession.

6.3.4.24 The IVS shall be deemed to have passed the tests in regard to correct detection of true accident events if the following has been observed during such tests:

- messages on all simulated accident types listed in Table 4 (see 6.4.17) have been transmitted successfully in automatic mode;

- all accident types established in GOST R 54620 (clause 6.2.1) have been detected correctly by the IVS (see 6.4.18);

- RTA severity assessment has been completed in accordance with the criteria implemented in the IVS and outlined in the general technical description of the IVS type, and the data have been transmitted correctly (see 6.4.19) in the MSD (only for IVS supporting the RTA severity assessment function);

- RTA acceleration profile has been transferred in accordance with GOST R 54620 (clauses 6.8.2—6.8.4), and accelerations of vehicle along its three axes have been determined to an accuracy not worse than 10 % as stated in 6.4.21 (only for IVS not supporting the RTA severity assessment function).

6.4 Checking resistance of in-vehicle emergency call system to false actuations

6.4.1 These tests are aimed at verification that the IVS is resistant to false actuations when accident events are detected automatically basing on the criterion established in GOST R 54620 (subsection 6.2).

6.4.2 The tests shall proceed using the shock testing machine and the mounting plate installed on it, as specified in Table 3.

6.4.3 The test item (IVS or ADR) to be arranged on the mounting plate and bench-tested on the shock testing machine shall be identified basing on the analysis of IVS design features (see clause 11 of Table 1).

6.4.4 *Test procedure*

6.4.4.1 Select one of the following orientations to secure the mounting plate to the work desk (carriage) of the shock testing machine in accordance with the requirements of GOST R ISO 8568 and GOST 30630.0.0 and of guidelines presented in the documentation:

a) direction of shock created by shock testing machine is opposite to "forward" movement direction of vehicle (frontal (head-on) collision);

b) direction of shock created by shock testing machine is perpendicular to "forward" movement direction of vehicle (side collision);

c) direction of shock created by shock testing machine coincides with "forward" movement direction of vehicle (rear shock);

N o t e s

1 The mark applied to the mounting plate (see Table 3) is used to align the plate on the shock bench.

2 The vehicle coordinate system shall be selected as per [3].

6.4.4.2 Complete the operations described in 6.3.4.2—6.3.4.12.

6.4.4.3 Expose the powered IVS to a single mechanical shock described in Table 5.

Table 5 — Required impact properties for checking IVS resistance to false actuations depending on direction of shock

Direction of shock created by shock testing machine in accordance with 6.4.4.1	Impact properties
Opposite to "forward" direction of vehicle movement (frontal (head-on) collision)	1 Peak acceleration: in the range from 14 to 18 g 2 Duration of shock acceleration wherein the acceleration created by bench in the direction of shock is in the required range from 14 to 18 g — greater than 30 ms (30 ms preferred)
Perpendicular to "forward" direction of vehicle movement (side collision)	1 Peak acceleration: in the range from 11 to 15 g 2 Duration of shock acceleration wherein the acceleration created by bench in the direction of shock is in the required range from 11 to 15 g — greater than 30 ms (30 ms preferred)
Presumed "forward" direction of vehicle movement (rear shock)	1 Peak acceleration: in the range from 12 to 16 g 2 Duration of shock acceleration wherein the acceleration created by bench in the direction of shock is in the required range from 12 to 16 g — greater than 30 ms (30 ms preferred)

6.4.4.4 Analyse the results of measurements obtained using the reference accelerometer and processed as per [6] to confirm that the required impact properties have been achieved during the test.

6.4.4.5 Using the ERA-GLONASS emulator UI, make sure that the IVS has not reported the RTA event in automatic mode.

6.4.4.6 Include the results of the tests as per 6.4.4.1—6.4.4.5 in the test report.

6.4.4.7 Change the mounting plate direction on the shock bench to the next one taken from 6.4.4.1 in order to create shock impact as per Table 5, and repeat the tests as per 6.4.4.2—6.4.4.6 for each direction of shock in succession.

6.4.4.8 The IVS shall be deemed to have passed the test of resistance to false actuations if not a single accident has been reported by the IVS in automatic mode for the whole duration of tests.

6.5 Checking conformity of RTA severity calculation algorithm to established requirements

6.5.1 These tests shall be performed for those IVS that support the RTA severity assessment function in accordance with the requirements of GOST R 54620 (section 6).

6.5.2 The tests shall be carried out using the emergency simulator (see Table 3).

6.5.3 *Test procedure*

6.5.3.1 Assemble the test circuit shown in Fig. B.1 (Appendix B), connect the emergency simulator to the IVS and prepare it for transmission of reference sets of data indicated in Table 6 to the IVS.

The basic characteristics of the reference sets of data as well as their acceleration profiles along the three axes of the vehicle are detailed in Appendix C.

Note — The data presentation format of acceleration profiles described in Appendix C may be converted to the one that is required for downloading such data to the IVS.

Table 6 — Reference sets of data used in tests

Designation	Brief description
Reference set of data No. 1	Acceleration profile along three vehicle axes that is typical to frontal (head-on) collision described by ASI index value greater than 1.8
Reference set of data No. 2	Acceleration profile along three vehicle axes that is typical to frontal (head-on) collision described by ASI index value less than 1.8
Reference set of data No. 3	Acceleration profile along three vehicle axes that is typical to side collision described by ASI index value greater than 1.8
Reference set of data No. 4	Acceleration profile along three vehicle axes that is typical to side collision described by ASI index value less than 1.8

6.5.3.2 Complete the operations described in 6.3.4.7—6.3.4.12.

6.5.3.3 Using the emergency simulator, transmit the reference sets of data listed in Table 6 to the IVS in succession.

6.5.3.4 Using the ERA-GLONASS emulator UI, check that the IVS response to the received reference sets of data corresponds to the one shown in Table 7.

Table 7 — IVS response to different reference sets of data

Designation of reference set of data transmitted to IVS	Automatic transmission of RTA message	RTA details transmitted in MSD
Reference set of data No. 1	Yes	1 Accident type (CrashDef[1)]): crashFront — frontal shock 2 RTA severity assessment (SevereCrashEstimation[2)]): TRUE[3)].
Reference set of data No. 2	No	No
Reference set of data No. 3	Yes	1 Accident type (CrashDef[1)]): crashSide — side shock 2 RTA severity assessment (SevereCrashEstimation[2)]): TRUE[3)].
Reference set of data No. 4	No	No

[1)] CrashDef— name of data block as per GOST R 54620 (Table C.2 (Appendix C)) describing accident type.

[2)] SevereCrashEstimation — name of data block as per GOST R 54620 (Table C.2 (Appendix C)) describing accident severity.

[3)] TRUE — parameter value corresponding to high level of hazard to life and health of persons occupying the vehicle cabin.

6.5.3.5 Repeat the steps 6.5.3.2—6.5.3.4 for each reference set of data indicated in Table 6.

6.5.3.6 The IVS shall be deemed to have passed the test of RTA severity calculation algorithm in regard to the requirements of GOST R 54620 if the IVS response to the reference sets of data received during the test has been proven to comply with Table 7.

6.6 Checking automatic RTA event detection capabilities of in-vehicle emergency call system in field tests

6.6.1 The tests are intended to verify that the capabilities of the IVS installed on the vehicle of the respective category in auxiliary equipment configuration meet the requirements of [1 (sub-clause 17.2 of Appendix 3)] pertaining to automatic detection of accident events and to MSD transfer in the tests provided for in the following documents:

- UNECE Regulations [3] and [4] — for vehicles of Category M1;
- UNECE Regulations [4] and [5] — for vehicles of Category N1.

N o t e — This concerns the requirements of automatic IVS actuation in response to signals from sensors of those accident detection systems (devices) that do not belong to passive safety systems of the vehicle.

6.6.2 The following functional capabilities of the IVS are also tested in regard to the requirements of GOST R 54620 (section 6) during the tests indicated in 6.6.1:

- recognition of accident type (frontal (head-on) collision, side collision);
- RTA severity assessment, if such function is supported by IVS;
- recording and transmission of RTA acceleration profile, if such function is supported by IVS.

N o t e s :

1 The IVS capability to recognise frontal (head-on) is checked in the tests described in UNECE Regulations [3] and [5].

2 The IVS capability to recognise side collisions is checked in the test described in UNECE Regulation [4].

3 Information on supported functions of the IVS submitted to tests shall be included in the general technical description on the IVS type (see 4.7).

4 The acceleration profile recording and transmission function is mandatory for those IVS that do not support the RTA severity assessment function.

6.6.3 Depending on the intended use of the IVS, the tests shall be carried out on either Category M1 vehicles or Category N1 vehicles from among those included in the general technical description of the IVS type (see section 4 of Table 1).

6.6.4 The recommended practice is to combine the tests of IVS functional features indicated in 6.6.1 and 6.6.2 with the vehicle tests as per 6.6.3 in regard to the requirements of UNECE Regulations [3], [4] and [5] when the type approval of the respective vehicle categories is carried out in accordance with [1].

N o t e — The decision on possible completion of the above tests in combination shall be agreed with the vehicle manufacturer and the certification body responsible for vehicle type approval activities.

6.6.5 When technically feasible, the IVS shall be tested on a vehicle delivered by the applicant.

6.6.6 Requirements for vehicles used in IVS tests

6.6.6.1 Any vehicle delivered for tests shall meet the general requirements to vehicles established in UNECE Regulations [3], [4], [5], including the requirements on availability of airbag(s).

6.6.6.2 The vehicle shall be equipped with the IVS installed in accordance with its installation and setup guide.

N o t e — Such equipping implies that the GNSS antenna and the GSM/UMTS antenna for the communication module are installed as well.

6.6.6.3 If the IVS is installed on the vehicle in the same TL that is testing the vehicle, then the ADR adjustment (calibration) works shall be carried out as detailed in the IVS installation and setup guide.

N o t e — During these works, the IVS shall be in passive mode as per GOST R 54620 (section 7).

6.6.6.4 If the vehicle is delivered for tests with the IVS already installed, then the documents confirming that the IVS installation and setup activities have been completed in accordance with the requirements of the IVS manufacturer shall be provided.

6.6.6.5 The vehicle shall be equipped with a reference 3D acceleration sensor (see Table 3) installed in accordance with the requirements of GOST R 52721 (subsection 6.5).

6.6.6.6 The vehicle shall be equipped with a device capable of video and audio recording in the vehicle cabin. Such device shall be placed so that the optical IVS state indicator would fall within the recording range. The device specifications and its mounting method shall ensure that video and audio recording is active at the time of collision and after it.

6.6.7 The tests shall be carried out in conditions corresponding to UNECE Regulations [3], [4], [5].

6.6.8 If the location of tests specified in the above Regulations for a particular TL carrying out the tests is not screened, then real GNSS signals shall be used to test the IVS. Otherwise, a simulator of GNSS signals shall be used.

6.6.9 The checks as per 6.1 and 6.2 shall be completed with no errors prior to field tests 6.6.11 and 6.6.12.

6.6.10 The IVS shall be in ERA mode as per GOST R 54620 (section 7) during the latter field tests.

6.6.11 *IVS test procedure provided in UNECE Regulations for frontal collisions of vehicles*

6.6.11.1 The vehicles of Category M1 equipped with IVS shall be tested in frontal collisions in accordance with UNECE Regulation [3].

N o t e — Category M1 vehicles that fall within the scope of UNECE Regulation [3] are implied here.

6.6.11.2 Frontal collisions of Category N1 vehicles equipped with IVS shall be tested in accordance with UNECE Regulation [5].

N o t e — Category N1 vehicles that fall within the scope of UNECE Regulation [5] are implied here.

6.6.11.3 Before the vehicle starts moving, check that the IVS is in ERA mode, and is operational in regard to possible transmission of MSD with RTA data. For the latter purpose, complete the operations described in 6.3.4.6—6.3.4.12, and then switch the IVS to ERA mode again.

6.6.11.4 Using the ERA-GLONASS emulator and proceeding in accordance with GOST R 55530 (subsection 6.1.1), check the following after the vehicle collides with an obstacle (for tests as per [3]) or with a barrier (for tests as per [5]):

a) an accident notification message has arrived, the transmitted MSD conforms to the requirements of GOST R 54620 (Appendix C), and the MSD contains valid automatic actuation ID of the IVS as required in GOST R 54620 (clause 9.1.2);

b) the CrashDef parameter established in GOST R 54620 (Table C.2 (Appendix C)) for identification of accident types has the value listed in Table 4 for "frontal (head-on) collision" accident type;

c) if the IVS supports the RTA severity assessment function, such assessment is included in the transmitted MSD as additional data, in accordance with GOST R 54620 (Appendix C). In this case, the SevereCrashEstimation parameter value shall be TRUE as required in GOST R 54620 (Table C.2 (Appendix C)) to indicate a severe accident given the overloads actually achieved in tests as per UNECE [3] and [5];

d) the airbags installed on the vehicle have operated.

6.6.11.5 If the IVS supports the acceleration profile transmission function, use the ERA-GLONASS emulator UI to request the transmission of such profile from the IVS through a wireless mobile communication channel established when the IVS has actuated automatically.

N o t e — The acceleration profile recording function is mandatory for those IVS that do not support the RTA severity assessment function.

6.6.11.6 Based on the results of measurements that have been obtained using the reference accelerometer installed on the vehicle and have been processed as per [6], determine the maximum acceleration values achieved (along the vehicle axes) during the collision.

6.6.11.7 After the response message from the IVS is received (in packet transmission mode), check that the maximum acceleration value determined by the IVS and included in the transmitted data corresponds to the readings of the reference sensor within the tolerance limit of 10 % as per GOST R 54620 (clause 6.8.4).

Check that the duration and rate of acceleration profile recordings meet the requirements stated in GOST R 54620 (section 6.8.2—6.8.4).

6.6.11.8 Based on the analysis of video and audio recordings made using the recording device installed on the vehicle (see 6.6.6.6), check that:

a) while transferring the MSD message in "Emergency call" mode, the IVS has notified the persons occupying the vehicle compartment (cabin) on the MSD transfer, by means of optical IVS status indicator or by playback of a relevant sound signal or voice message, as required in GOST R 54620 (subsection 7.5.3.6);

b) after the MSD transfer and prior to connecting the voice channel, the IVS has notified the persons in the vehicle compartment (cabin) that the connection of the voice channel is to be established, by playback of a relevant sound signal or voice message, as required in GOST R 54620 (subsection 7.5.3.7);

c) after connecting the voice channel, the IVS has reported that to the persons present in the vehicle compartment (cabin) using the optical IVS status indicator, as required in GOST R 54620 (subsection 7.5.3.8);

d) during the dial-up (initiated using the ERA-GLONASS emulator UI in the communication session established upon automatic actuation of the IVS), the IVS has notified the persons present in the vehicle cabin on such dialling, either using the optical IVS status indicator, or by playback of a relevant sound signal or voice message, as required in GOST R 54620 (subsection 7.5.3.5).

6.6.11.9 After the check as per item d) of 6.6.11.8, one of the testers shall occupy a place in the vehicle compartment, and perform a duplex voice communication with the other tester who is located next to the ERA-GLONASS emulator and is simulating actions of the emergency service operator in order to check that the IVS conforms to the requirements of [1 (sub-clause 17.2.2 (Appendix 3))].

6.6.11.10 Include the results of the tests as per 6.6.11.3—6.6.11.9 in the test report.

6.6.11.11 The IVS shall be deemed to have passed the tests provided for in UNECE Regulations [3] and [5] regarding frontal collisions, and to comply with the requirements GOST R 54620 (section 6) regarding its functional capabilities in such collisions, if:

a) in the course of the tests:

- MSD has been generated and transmitted in automatic mode correctly;
- "frontal collision" accident type has been recognised by the IVS unambiguously;
- RTA severity assessment has been performed in accordance with the criteria implemented in the IVS and outlined in the general technical description of the IVS type, whereas the data included in the MSD have been transmitted successfully (only for IVS supporting the RTA severity assessment function);
- RTA acceleration profile has been transferred in accordance with GOST R 54620 (clauses 6.8.2—6.8.4), and accelerations of vehicle along its three axes have been determined to an accuracy not worse than 10 % as stated in 6.4.21 (only for IVS not supporting the RTA severity assessment function).
- persons in the vehicle compartment (cabin) have been duly notified using an appropriate notification method and following the requirements of GOST R 54620 (sub-clauses 7.5.3.5— 7.5.3.8);

b) after the tests, the IVS has remained functional, and capable to ensure duplex voice communication with emergency services as required in [1 (sub-clause 17.2.2 (Appendix 3)].

N o t e — The automatic actuation of the IVS and the RTA severity assessment during the tests of frontal collisions shall be considered in their inter-relation with the operation of safety airbag(s) of the vehicle.

6.6.12 *IVS test procedure provided in UNECE Regulations for side collisions of vehicles*

6.6.12.1 The vehicles equipped with IVS shall be tested in side collisions in accordance with UNECE Regulation [4].

N o t e — Vehicles of Category M1 and N1 that fall within the scope of UNECE Regulation [4] are implied.

6.6.12.2 Check that the emergency call and the acceleration profile transfer (if supported by the IVS) are possible when the ignition is off. To this end, check the IGNITION_OFF_FOLLOW_UP_TIME1 and IGNITION_OFF_FOLLOW_UP_TIME2 setup parameters that define the time intervals wherein the RTA acceleration profile is being recorded and the accident is being identified, respectively, with the ignition turned off. The values of these parameters shall correspond to those specified in GOST R 54620 (Table A.1 (Appendix A)).

N o t e — As required in UNECE Regulation [4 (Appendix 3)], the vehicle shall be motionless with its ignition off during the tests provided for in this Regulation.

6.6.12.3 Prior to shocking the vehicle under test, check that the IVS is in ERA mode, and is capable to transfer an MSD with RTA data. As for the latter, perform the operations 6.3.4.6—6.3.4.12 and then switch the IVS to ERA mode again.

6.6.12.4 After shocking the vehicle with a movable deforming barrier to simulate a side collision, use the ERA-GLONASS emulator UI to check the following, in accordance with GOST R 55530 (clause 6.1.1):

a) an accident notification message has arrived, has been generated correctly and in compliance with GOST R 54620 (Appendix C), and the MSD contains valid automatic actuation ID of the IVS as required in GOST R 54620 (clause 9.1.2);

b) the CrashDef parameter included the transmitted MSD and defined in GOST R 54620 (Table C.2 (Appendix C)) for identification of accident types has the value listed for "side collisions" in Table 4;

c) if the IVS supports the RTA severity assessment function, such assessment is included in the transmitted MSD as additional data, in accordance with GOST R 54620 (Appendix C). In this case, the SevereCrashEstimation parameter value shall be TRUE as required in GOST R 54620 (Table C.2 (Appendix C)) to indicate a severe accident given the overloads actually achieved in tests as per UNECE [4];

d) the airbags installed on the vehicle have operated.

6.6.12.5 Complete the tests as per 6.6.11.5—6.6.11.9.

6.6.12.6 Include the results of the tests as per 6.6.12.2—6.6.12.5 in the test report.

6.6.12.7 The IVS shall be deemed to have passed the tests provided for in UNECE Regulations [4] regarding side collisions, and to comply with the requirements GOST R 54620 (section 6) regarding its functional capabilities in such collisions if:

a) in the course of the tests:

- MSD has been generated and transmitted in automatic mode correctly;
- "side collision" accident type has been recognised by the IVS unambiguously;
- RTA severity assessment has been performed in accordance with the criteria implemented in the IVS and outlined in the general technical description of the IVS type, and the assessment data have been transmitted correctly in the MSD (only for IVS supporting the RTA severity assessment function);
- RTA acceleration profile has been transferred in accordance with GOST R 54620 (clauses 6.8.2—6.8.4), and the accelerations of the vehicle along its three axes have been determined to an accuracy not worse than 10 % (only for IVS not supporting the RTA severity assessment function);

b) after the tests, the IVS remained functional, and capable to ensure duplex voice communication with emergency services as required in [1 (sub-clause 17.2.2 (Appendix 3)].

N o t e — The automatic actuation of the IVS and the RTA severity assessment during the tests of side collisions shall be considered in their inter-relation with the operation of safety airbag(s) of the vehicle.

Appendix A
(recommended)

Sampling report form

Sampling Report

_____
(product designation)

1. Name of product manufacturer Company _____
2. Name of sampler organisation (subdivision) _____
3. Product type designation _____
(mass production, batch of particular size
_____ , batch size _____
or production unit)

4. Title of document underlying product manufacture _____

5. Purpose of product submission to tests _____
_____

6. Sampling location _____ date _____

No. of samples _____

7. Visual inspection results _____

8. Document No. _____

Date of sample acceptance by TL _____

9. Sampling performed using "maximum impartiality sampling" method as per GOST 18321-78

10. Samples packaged _____ and sealed.
(packaging and/or transport containers)

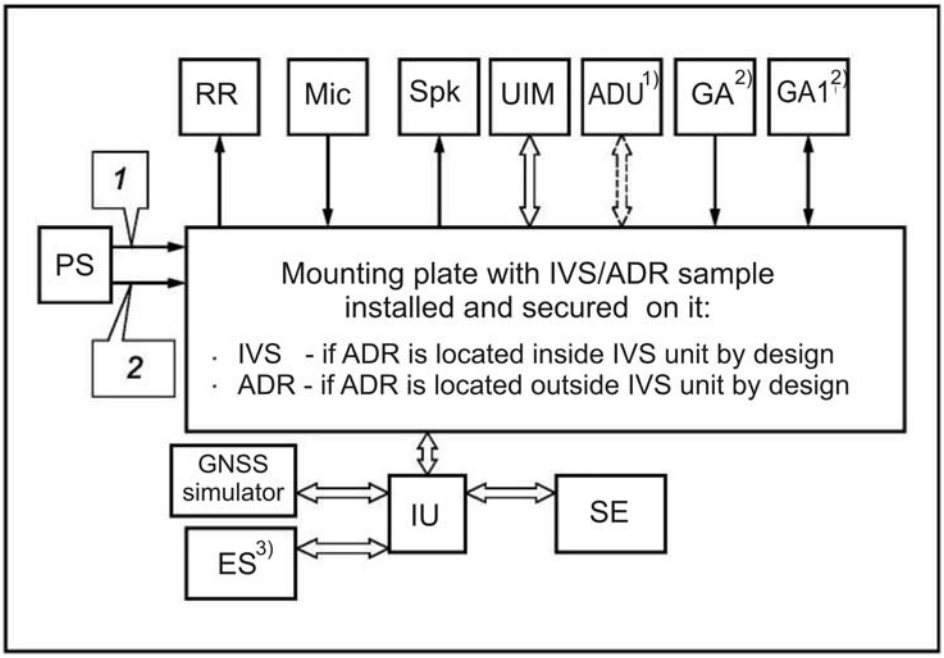
11 Samples shipment date to TL _____

12. Samples shipped to TL by _____
(courier, mail, etc.)

Representative of Applicant		**Representative of Testing Laboratory**	
_____	_____	_____	_____
(signature)	(full printed name)	(signature)	(full printed name)

Appendix B
(normative)

Connection flow chart for tests of accident event detection capabilities of in-vehicle emergency call systems



[1] When the ADR not built into the IVS unit is located on the mounting plate.
[2] GNSS and SE antennas are not connected for tests using GNSS simulator.
[3] ES (emergency simulator) is connected only for tests specified in 6.5.

RR — radio recorder of vehicle; Mic — microphone; Spk — speaker; UIM — user interface module of IVS; ADU — accident detector unit; GA —GLONASS antenna; GA1 — GSM/UMTS antenna; PS — power supply (12/24 V); IU — interface unit; SE — ERA-GLONASS system emulator; *1* — power cable; *2* — ignition circuit

Figure B.1 — Connection of mounting plate to IVS, peripheral and testing equipment

Appendix C
(normative)

Reference sets of data

C.1 Reference set of data No. 1

Table C. 1.1 — Basic parameters for Reference Set of Data No. 1

Accident type	Frontal (head-on) collision
ASI_{15} index (as per GOST R 54620)	Greater than (equal to) 1.8
Direction details (coordinate system in accordance with [3])	Acceleration backwards (deceleration) — "+X" axis Acceleration forwards — "-X" axis Acceleration to right — "+Y" axis Acceleration to left — "-Y" axis Acceleration upwards — "+Z" axis Acceleration downwards — "-Z" axis
Acceleration profile recording interval, s	7.5
Number of measurements	750
Acceleration profile units	*g* (gravity acceleration)
Sample rate, Hz	100

Table C.1.2 — Acceleration profile for reference set of data No. 1 Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
1	0,120	0,140	0,320	21	0,230	–0,180	–0,190	41	0,180	0,390	–0,190
2	0,000	–0,110	0,140	22	0,230	0,490	–0,100	42	0,230	–0,280	–0,010
3	0,120	0,180	0,210	23	0,120	–0,180	–0,190	43	0,410	0,350	0,020
4	0,000	0,070	0,110	24	0,290	0,390	–0,190	44	0,120	0,110	–0,160
5	0,060	0,110	0,210	25	0,230	0,280	–0,210	45	0,060	0,040	0,140
6	–0,060	0,000	0,020	26	0,120	0,210	–0,030	46	0,060	–0,070	0,060
7	0,060	0,350	0,160	27	0,230	–0,140	–0,120	47	0,180	0,000	–0,030
8	0,060	0,040	0,020	28	0,230	0,280	–0,210	48	0,180	0,250	–0,080
9	0,120	0,280	0,020	29	0,230	0,000	–0,140	49	0,060	0,000	–0,050
10	0,000	–0,040	0,020	30	0,180	0,140	–0,100	50	0,060	0,000	0,110
11	0,000	0,350	0,140	31	0,350	–0,070	–0,210	51	0,120	0,110	–0,050
12	0,000	0,000	–0,080	32	0,290	0,070	–0,190	52	0,180	0,420	0,020
13	0,180	0,250	–0,050	33	0,120	0,250	–0,190	53	0,120	–0,390	0,090
14	0,230	0,280	–0,050	34	0,120	–0,180	–0,010	54	0,230	0,530	0,040
15	0,290	0,140	–0,080	35	0,180	0,110	–0,100	55	0,000	–0,110	–0,100
16	0,290	0,320	–0,050	36	0,350	–0,180	–0,160	56	0,410	0,070	0,290
17	0,230	0,390	–0,080	37	0,290	0,250	–0,140	57	0,230	–0,180	0,160
18	0,230	0,560	–0,010	38	0,180	–0,320	–0,100	58	0,120	0,280	0,160
19	0,000	–0,350	–0,160	39	0,350	–0,040	–0,120	59	0,230	–0,040	0,060
20	0,180	0,670	–0,080	40	0,290	–0,040	–0,080	60	0,060	0,280	0,090

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
61	0,120	–0,070	0,140	81	0,230	0,250	–0,010	101	0,120	–0,110	0,020
62	0,120	0,140	0,060	82	0,290	0,140	–0,030	102	0,410	0,070	0,020
63	0,230	0,600	0,090	83	0,120	–0,140	–0,010	103	0,230	–0,280	0,020
64	0,230	0,180	–0,140	84	0,410	0,600	–0,100	104	0,290	0,320	0,090
65	0,470	0,460	–0,050	85	–0,120	0,490	–0,010	105	0,290	0,000	0,040
66	0,410	0,320	0,020	86	0,120	–0,110	–0,120	106	0,350	0,420	0,110
67	0,180	0,770	0,140	87	0,470	0,700	–0,080	107	0,290	–0,070	–0,080
68	0,000	–0,770	0,020	88	0,230	–0,770	–0,050	108	0,230	0,070	0,040
69	0,410	0,700	0,190	89	0,290	–0,210	–0,080	109	0,120	–0,180	0,190
70	0,180	0,320	–0,290	90	0,180	–0,350	–0,010	110	0,060	0,180	0,160
71	0,000	0,000	–0,010	91	0,350	0,070	0,020	111	0,120	–0,320	0,020
72	0,230	0,420	0,020	92	0,350	0,180	–0,050	112	0,230	0,140	0,020
73	0,350	0,110	–0,190	93	0,470	0,110	–0,050	113	0,180	0,070	–0,100
74	0,410	0,530	0,110	94	0,350	0,070	–0,080	114	0,180	0,350	0,020
75	0,290	–0,110	–0,050	95	0,230	–0,040	–0,010	115	0,290	–0,210	–0,050
76	0,410	0,350	0,160	96	0,410	–0,040	0,110	116	0,530	0,530	–0,100
77	0,350	–0,070	–0,120	97	0,290	–0,070	–0,010	117	0,530	0,250	–0,050
78	0,230	0,350	–0,010	98	0,290	–0,250	–0,010	118	0,290	0,460	0,090
79	0,180	–0,070	0,020	99	0,230	–0,180	–0,010	119	0,180	0,000	–0,120
80	0,230	0,490	–0,030	100	0,120	–0,320	–0,010	120	0,290	0,320	–0,030

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
121	0,230	–0,110	–0,120	141	0,350	–0,140	–0,140	161	0,230	0,000	0,020
122	0,350	0,490	–0,100	142	0,290	0,490	–0,030	162	0,230	0,000	0,040
123	0,230	0,110	–0,050	143	0,290	–0,420	–0,050	163	0,470	0,140	–0,050
124	0,120	0,460	–0,010	144	0,530	0,320	–0,010	164	0,410	0,000	–0,080
125	0,120	0,320	0,020	145	0,350	0,140	–0,080	165	0,290	0,280	–0,050
126	0,230	0,210	–0,030	146	0,230	0,000	–0,010	166	0,290	0,070	–0,100
127	0,470	0,490	–0,030	147	0,230	0,320	0,040	167	0,230	–0,070	–0,080
128	0,590	0,140	–0,210	148	0,350	–0,320	–0,100	168	0,410	0,140	–0,100
129	0,350	0,350	–0,010	149	0,410	0,250	–0,010	169	0,290	0,110	–0,080
130	0,180	–0,070	0,020	150	0,290	–0,320	–0,080	170	0,120	0,040	0,020
131	0,180	0,420	–0,010	151	0,230	0,210	0,040	171	0,180	0,180	–0,010
132	0,230	0,000	0,020	152	0,230	0,000	–0,030	172	0,290	0,530	–0,100
133	0,120	0,390	–0,080	153	0,470	0,140	–0,010	173	0,230	0,180	0,040
134	0,120	–0,110	–0,100	154	0,350	–0,070	–0,080	174	0,230	0,560	0,040
135	0,350	0,490	–0,050	155	0,470	0,140	0,040	175	0,000	–0,180	–0,190
136	0,290	–0,180	–0,050	156	0,410	–0,140	0,090	176	0,230	0,560	0,020
137	0,410	0,210	–0,010	157	0,410	0,110	0,020	177	0,180	–0,350	–0,030
138	0,290	0,070	–0,030	158	0,470	–0,210	0,020	178	0,120	0,320	0,040
139	0,290	0,000	–0,120	159	0,410	0,000	0,020	179	0,120	0,280	–0,160
140	0,290	0,460	–0,030	160	0,180	–0,070	0,020	180	0,180	0,000	–0,050

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
181	0,230	0,140	–0,010	201	0,230	0,040	–0,030	221	0,530	0,110	0,140
182	0,060	0,210	–0,030	202	0,470	0,070	–0,010	222	0,350	0,070	0,140
183	0,000	0,040	–0,030	203	0,350	–0,140	–0,030	223	0,410	0,040	0,040
184	0,290	0,180	0,040	204	0,290	0,390	0,140	224	0,290	–0,110	0,020
185	0,180	0,070	–0,160	205	0,290	–0,180	0,090	225	0,530	0,000	0,020
186	0,180	0,320	–0,250	206	0,410	0,420	0,090	226	0,350	0,000	–0,080
187	0,060	0,320	–0,230	207	0,470	–0,140	0,060	227	0,290	0,070	0,040
188	0,230	0,180	–0,310	208	0,290	0,980	0,110	228	0,350	–0,040	0,090
189	0,530	0,210	–0,270	209	0,290	–0,390	0,140	229	0,470	0,070	0,060
190	0,120	0,180	–0,160	210	0,290	0,350	0,090	230	0,410	0,070	–0,010
191	0,230	0,210	–0,010	211	0,470	–0,110	–0,030	231	0,470	0,070	0,040
192	0,350	–0,180	–0,140	212	0,410	0,390	0,060	232	0,470	0,180	–0,010
193	0,590	0,460	–0,120	213	0,290	–0,250	0,140	233	0,410	0,110	–0,080
194	0,230	0,180	–0,160	214	0,410	0,070	0,090	234	0,470	0,140	–0,050
195	0,060	0,320	–0,100	215	0,470	0,110	0,160	235	0,350	0,110	–0,010
196	0,410	0,070	–0,080	216	0,530	–0,110	0,060	236	0,350	0,110	–0,050
197	0,470	0,490	–0,080	217	0,290	0,180	0,060	237	0,230	0,070	–0,080
198	0,470	0,210	0,020	218	0,410	0,000	0,040	238	0,350	0,000	–0,100
199	0,180	0,070	–0,030	219	0,640	0,350	–0,010	239	0,530	0,070	–0,100
200	0,230	0,040	0,110	220	0,530	0,000	0,040	240	0,350	0,070	–0,120

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
241	0,350	0,040	–0,030	261	–0,590	0,530	0,140	281	0,290	0,110	0,140
242	0,410	0,140	–0,050	262	0,470	0,040	–0,290	282	0,350	0,180	–0,030
243	0,410	0,140	–0,100	263	–0,120	0,040	0,040	283	0,530	0,000	–0,010
244	0,410	0,210	–0,080	264	0,530	0,000	–0,140	284	0,230	0,040	–0,010
245	0,410	0,180	–0,120	265	0,470	0,280	0,040	285	0,350	0,110	–0,050
246	0,350	0,210	–0,140	266	0,640	0,140	0,190	286	0,350	0,070	0,040
247	0,350	0,210	–0,100	267	0,290	0,110	–0,030	287	0,350	0,140	–0,080
248	0,180	0,140	–0,100	268	0,350	0,250	0,060	288	0,350	0,180	–0,010
249	0,000	0,140	–0,080	269	0,410	0,280	0,160	289	0,410	0,040	–0,030
250	0,120	0,110	0,020	270	0,470	0,040	0,020	290	0,410	0,070	–0,080
251	0,410	0,180	–0,140	271	0,590	0,390	–0,100	291	0,290	0,040	–0,080
252	0,640	0,140	–0,160	272	0,180	0,040	0,090	292	0,350	0,070	–0,010
253	0,530	0,070	–0,120	273	0,230	0,070	–0,010	293	0,410	0,000	–0,140
254	0,350	0,070	–0,010	274	0,410	0,250	–0,030	294	0,350	0,070	–0,050
255	0,290	0,180	0,040	275	0,470	0,180	0,040	295	0,350	0,110	–0,030
256	0,410	0,140	–0,050	276	0,410	0,140	0,020	296	0,230	0,040	–0,050
257	0,060	–0,070	–0,010	277	0,230	0,070	–0,010	297	0,410	0,140	–0,050
258	0,470	0,320	–0,050	278	0,350	0,040	0,040	298	0,180	0,040	–0,190
259	0,000	0,070	–0,100	279	0,590	0,140	–0,080	299	0,000	0,040	–0,160
260	1,170	0,320	0,690	280	0,290	0,070	–0,010	300	0,410	0,110	–0,230

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
301	0,640	0,070	–0,350	321	0,290	0,180	–0,080	341	0,470	0,280	–0,010
302	0,410	0,070	–0,140	322	0,350	0,000	0,110	342	0,530	0,350	–0,050
303	0,230	0,040	0,140	323	0,350	0,040	0,090	343	0,290	0,180	–0,160
304	0,180	0,070	0,090	324	0,470	0,000	0,060	344	0,290	0,180	–0,100
305	0,410	0,210	–0,120	325	0,410	0,110	0,040	345	0,350	0,210	–0,140
306	0,640	0,070	–0,190	326	0,350	0,140	0,020	346	0,410	0,140	–0,120
307	0,350	0,180	–0,050	327	0,410	0,210	–0,010	347	0,590	0,140	0,040
308	0,230	0,280	–0,050	328	0,410	0,140	0,020	348	0,410	0,140	0,060
309	0,290	0,070	0,040	329	0,530	0,110	0,040	349	0,290	0,000	0,110
310	0,590	0,250	–0,010	330	0,470	0,140	0,060	350	0,590	0,110	0,110
311	0,590	0,110	0,020	331	0,530	0,110	0,190	351	0,530	0,210	–0,010
312	0,350	0,040	0,060	332	0,640	0,180	0,160	352	0,120	0,110	0,060
313	0,230	0,140	0,020	333	0,590	0,070	0,060	353	0,180	0,140	–0,030
314	0,410	0,110	0,020	334	0,120	0,070	0,110	354	0,350	0,000	–0,230
315	0,700	0,180	0,090	335	0,180	0,210	–0,030	355	0,640	0,110	–0,210
316	0,530	0,250	0,110	336	0,230	0,110	–0,210	356	0,350	0,070	–0,050
317	0,230	0,040	0,210	337	0,590	0,460	–0,230	357	0,230	0,000	0,060
318	0,290	0,140	0,090	338	0,470	0,040	–0,100	358	0,230	0,040	–0,030
319	0,350	0,000	–0,160	339	0,230	0,070	–0,010	359	0,470	0,070	–0,100
320	0,640	0,250	–0,100	340	0,350	0,250	–0,030	360	0,350	0,040	–0,160

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
361	0,350	0,070	–0,100	381	5,270	–0,280	–0,030	401	–0,700	–1,060	–0,230
362	0,470	0,110	–0,160	382	4,100	–0,250	–0,960	402	–0,410	–0,490	–0,050
363	0,180	0,110	–0,190	383	2,290	0,210	–0,160	403	–0,060	–0,560	–0,010
364	0,180	0,140	–0,080	384	2,460	–0,600	–0,580	404	0,350	–0,460	0,020
365	0,290	0,070	0,040	385	–0,120	–0,560	–0,540	405	0,470	–0,070	0,060
366	0,350	0,140	–0,080	386	–0,230	–0,460	–0,700	406	0,470	–0,280	–0,230
367	0,640	0,070	–0,030	387	0,530	–0,950	–0,470	407	0,700	0,180	0,060
368	0,700	0,070	0,020	388	–0,530	–1,790	0,240	408	0,410	0,000	0,040
369	0,290	0,040	–0,010	389	–1,470	–0,840	–0,310	409	0,120	0,000	0,040
370	5,630	0,140	–0,190	390	–0,590	–1,550	–0,360	410	0,230	0,320	–0,030
371	3,160	–0,600	–0,830	391	0,350	–1,200	–0,210	411	–0,120	0,040	0,060
372	16,760	–3,550	–0,970	392	0,350	–0,600	–0,600	412	–0,060	0,180	0,190
373	12,890	1,480	1,390	393	0,590	–0,670	–0,400	413	–0,180	0,000	–0,030
374	23,850	4,110	0,060	394	0,530	–1,020	–0,190	414	0,000	0,320	0,020
375	24,000	6,610	6,240	395	0,880	0,000	–0,290	415	0,120	0,040	0,020
376	24,000	–1,090	–0,540	396	1,460	–0,630	–0,310	416	0,290	0,320	0,090
377	24,000	7,590	0,980	397	0,940	–0,600	–0,290	417	0,350	0,140	–0,030
378	24,000	3,660	0,940	398	0,000	–0,180	–0,010	418	0,590	0,460	0,110
379	24,000	–2,110	–0,310	399	–0,230	–0,980	–0,030	419	0,640	0,140	0,160
380	9,670	0,600	0,400	400	–0,530	–0,600	–0,160	420	0,410	0,140	0,190

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
421	0,350	0,250	0,140	441	0,290	0,770	–0,010	461	0,120	–0,180	–0,080
422	0,290	0,110	0,140	442	0,290	0,600	–0,100	462	0,180	–0,280	–0,120
423	0,120	0,140	0,290	443	0,410	0,630	–0,030	463	0,230	–0,180	–0,030
424	0,000	0,000	0,160	444	0,350	0,490	–0,080	464	0,230	–0,250	–0,080
425	0,000	0,320	0,240	445	0,230	0,420	–0,050	465	0,350	–0,140	–0,030
426	0,060	0,110	0,210	446	0,180	0,460	–0,080	466	0,290	–0,210	–0,050
427	0,230	0,320	0,190	447	0,180	0,320	–0,100	467	0,290	–0,250	–0,030
428	0,290	0,320	0,160	448	0,120	0,250	–0,030	468	0,290	–0,140	–0,050
429	0,410	0,420	0,090	449	0,120	0,210	–0,050	469	0,290	–0,140	–0,050
430	0,530	0,460	0,160	450	0,120	0,110	–0,050	470	0,180	–0,040	–0,050
431	0,530	0,390	0,090	451	0,180	0,000	–0,080	471	0,180	–0,040	–0,050
432	0,470	0,600	0,110	452	0,230	0,110	–0,030	472	0,120	0,000	–0,080
433	0,290	0,460	0,060	453	0,180	–0,110	–0,120	473	0,120	0,000	–0,050
434	0,120	0,670	0,110	454	0,350	0,000	–0,050	474	0,120	0,110	–0,010
435	0,060	0,630	–0,010	455	0,410	–0,140	–0,080	475	0,180	0,000	–0,010
436	0,000	0,700	–0,030	456	0,350	–0,180	–0,030	476	0,230	0,110	–0,010
437	0,000	0,770	–0,080	457	0,350	–0,140	–0,100	477	0,230	0,140	–0,010
438	0,230	0,840	–0,050	458	0,230	–0,180	–0,050	478	0,230	0,140	–0,030
439	0,180	0,810	–0,030	459	0,180	–0,210	–0,030	479	0,230	0,250	–0,030
440	0,230	0,810	–0,010	460	0,120	–0,280	–0,080	480	0,230	0,210	–0,050

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
481	0,180	0,250	–0,030	501	0,230	0,180	0,040	521	0,230	0,110	–0,030
482	0,180	0,250	–0,030	502	0,230	0,180	–0,030	522	0,290	0,040	–0,050
483	0,120	0,280	0,020	503	0,230	0,210	–0,010	523	0,230	0,040	–0,010
484	0,180	0,210	–0,010	504	0,230	0,210	–0,010	524	0,230	0,040	–0,080
485	0,180	0,280	0,020	505	0,180	0,250	–0,010	525	0,230	0,040	–0,030
486	0,180	0,210	–0,030	506	0,120	0,210	–0,010	526	0,230	0,040	0,020
487	0,180	0,210	0,020	507	0,180	0,250	–0,010	527	0,290	0,000	–0,050
488	0,230	0,180	–0,030	508	0,120	0,280	–0,030	528	0,230	0,000	0,020
489	0,180	0,180	–0,030	509	0,180	0,210	–0,050	529	0,290	–0,040	–0,030
490	0,290	0,250	–0,010	510	0,180	0,320	–0,030	530	0,230	–0,040	–0,010
491	0,290	0,140	–0,030	511	0,180	0,250	–0,050	531	0,180	–0,040	–0,030
492	0,290	0,180	0,020	512	0,180	0,250	–0,010	532	0,230	0,000	0,020
493	0,230	0,180	0,020	513	0,230	0,280	–0,030	533	0,180	–0,070	–0,050
494	0,230	0,140	0,020	514	0,180	0,250	–0,050	534	0,180	0,000	–0,010
495	0,230	0,110	–0,010	515	0,180	0,280	–0,050	535	0,230	0,000	–0,010
496	0,180	0,180	–0,030	516	0,230	0,210	–0,050	536	0,230	0,000	–0,030
497	0,180	0,140	–0,010	517	0,180	0,210	–0,030	537	0,230	0,000	0,040
498	0,180	0,180	–0,010	518	0,230	0,140	–0,010	538	0,230	0,070	–0,010
499	0,230	0,180	–0,030	519	0,230	0,140	–0,030	539	0,180	0,110	–0,010
500	0,230	0,140	–0,010	520	0,230	0,110	–0,030	540	0,180	0,110	–0,030

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
541	0,180	0,140	0,020	561	0,180	0,210	–0,030	581	0,120	0,210	–0,010
542	0,180	0,140	–0,030	562	0,180	0,210	0,020	582	0,180	0,250	–0,010
543	0,180	0,210	–0,010	563	0,230	0,180	–0,030	583	0,120	0,280	–0,030
544	0,180	0,180	–0,010	564	0,180	0,180	–0,030	584	0,180	0,210	–0,050
545	0,180	0,210	–0,010	565	0,290	0,250	–0,010	585	0,180	0,320	–0,030
546	0,180	0,210	0,020	566	0,290	0,140	–0,030	586	0,180	0,250	–0,050
547	0,180	0,180	–0,050	567	0,290	0,180	0,020	587	0,180	0,250	–0,010
548	0,180	0,250	–0,030	568	0,230	0,180	0,020	588	0,230	0,280	–0,030
549	0,230	0,250	–0,050	569	0,230	0,140	0,020	589	0,180	0,250	–0,050
550	0,180	0,250	–0,030	570	0,230	0,110	–0,010	590	0,180	0,280	–0,050
551	0,230	0,110	–0,010	571	0,180	0,180	–0,030	591	0,230	0,210	–0,050
552	0,230	0,140	–0,010	572	0,180	0,140	–0,010	592	0,180	0,210	–0,030
553	0,230	0,140	–0,030	573	0,180	0,180	–0,010	593	0,230	0,140	–0,010
554	0,230	0,250	–0,030	574	0,230	0,180	–0,030	594	0,230	0,140	–0,030
555	0,230	0,210	–0,050	575	0,230	0,140	–0,010	595	0,230	0,110	–0,030
556	0,180	0,250	–0,030	576	0,230	0,180	0,040	596	0,230	0,110	–0,030
557	0,180	0,250	–0,030	577	0,230	0,180	–0,030	597	0,290	0,040	–0,050
558	0,120	0,280	0,020	578	0,230	0,210	–0,010	598	0,230	0,040	–0,010
559	0,180	0,210	–0,010	579	0,230	0,210	–0,010	599	0,230	0,040	–0,080
560	0,180	0,280	0,020	580	0,180	0,250	–0,010	600	0,230	0,040	–0,030

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
601	0,350	0,110	–0,010	621	0,230	0,180	0,020	641	0,290	0,110	–0,030
602	0,350	0,070	–0,030	622	0,290	0,140	–0,030	642	0,230	0,110	–0,030
603	0,350	0,110	–0,050	623	0,290	0,140	–0,010	643	0,230	0,140	–0,010
604	0,290	0,140	–0,050	624	0,230	0,110	–0,030	644	0,230	0,110	–0,030
605	0,290	0,140	–0,030	625	0,290	0,210	–0,010	645	0,230	0,140	–0,010
606	0,290	0,110	–0,030	626	0,290	0,110	–0,050	646	0,230	0,140	–0,030
607	0,290	0,140	–0,010	627	0,290	0,140	–0,010	647	0,230	0,140	–0,030
608	0,290	0,140	–0,030	628	0,290	0,110	–0,050	648	0,230	0,140	–0,030
609	0,290	0,180	–0,010	629	0,230	0,110	–0,010	649	0,230	0,180	–0,050
610	0,290	0,140	–0,030	630	0,290	0,110	–0,010	650	0,180	0,140	–0,030
611	0,290	0,180	–0,030	631	0,230	0,110	–0,030	651	0,230	0,180	–0,030
612	0,290	0,140	–0,030	632	0,290	0,070	–0,010	652	0,230	0,140	–0,030
613	0,290	0,210	–0,010	633	0,230	0,110	–0,010	653	0,230	0,180	–0,010
614	0,290	0,140	–0,010	634	0,230	0,110	–0,010	654	0,230	0,140	–0,010
615	0,290	0,180	–0,010	635	0,230	0,070	–0,030	655	0,180	0,140	–0,030
616	0,230	0,180	–0,010	636	0,230	0,110	–0,010	656	0,230	0,180	–0,010
617	0,290	0,180	0,020	637	0,230	0,110	–0,010	657	0,230	0,140	–0,030
618	0,290	0,180	–0,010	638	0,290	0,110	–0,030	658	0,230	0,110	–0,030
619	0,290	0,180	–0,010	639	0,230	0,110	–0,010	659	0,230	0,180	–0,030
620	0,230	0,140	–0,030	640	0,230	0,070	–0,010	660	0,230	0,140	–0,010

Table C.1.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
661	0,230	0,140	–0,030	681	0,290	0,140	–0,030	701	0,290	0,140	–0,030
662	0,230	0,140	–0,030	682	0,230	0,140	–0,030	702	0,290	0,140	–0,030
663	0,230	0,110	–0,030	683	0,230	0,140	–0,010	703	0,230	0,140	–0,010
664	0,180	0,140	–0,050	684	0,230	0,110	–0,050	704	0,230	0,140	–0,010
665	0,230	0,110	–0,050	685	0,230	0,110	–0,030	705	0,230	0,110	–0,030
666	0,230	0,140	–0,010	686	0,230	0,110	–0,030	706	0,230	0,110	–0,010
667	0,230	0,110	–0,010	687	0,230	0,110	–0,030	707	0,230	0,140	–0,010
668	0,230	0,110	–0,010	688	0,290	0,140	–0,030	708	0,230	0,110	–0,010
669	0,180	0,110	–0,030	689	0,230	0,140	–0,030	709	0,180	0,140	–0,030
670	0,230	0,140	–0,030	690	0,230	0,180	–0,050	710	0,230	0,140	–0,010
671	0,290	0,110	–0,030	691	0,230	0,140	–0,050	711	0,230	0,140	–0,030
672	0,230	0,110	–0,010	692	0,230	0,180	–0,030	712	0,230	0,140	–0,010
673	0,230	0,070	–0,030	693	0,290	0,140	–0,010	713	0,180	0,070	–0,030
674	0,230	0,110	–0,030	694	0,230	0,110	–0,030	714	0,180	0,140	–0,010
675	0,230	0,110	0,020	695	0,290	0,140	–0,010	715	0,180	0,110	0,020
676	0,230	0,110	–0,050	696	0,290	0,140	–0,010	716	0,180	0,140	0,020
677	0,230	0,110	–0,010	697	0,290	0,140	–0,010	717	0,230	0,140	–0,030
678	0,230	0,140	–0,050	698	0,290	0,140	–0,050	718	0,180	0,110	0,020
679	0,290	0,070	–0,030	699	0,290	0,110	–0,030	719	0,180	0,140	–0,030
680	0,230	0,140	–0,030	700	0,290	0,140	–0,010	720	0,180	0,070	–0,010

Table C.1.2 (continued) Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
721	0,180	0,110	–0,010	731	0,120	0,140	–0,030	741	0,120	0,110	–0,030
722	0,180	0,140	–0,030	732	0,180	0,110	–0,010	742	0,180	0,110	–0,030
723	0,180	0,110	–0,010	733	0,180	0,140	–0,050	743	0,180	0,070	–0,050
724	0,180	0,140	–0,010	734	0,120	0,110	–0,010	744	0,180	0,110	–0,050
725	0,180	0,110	–0,010	735	0,180	0,140	–0,010	745	0,180	0,070	–0,050
726	0,180	0,110	–0,010	736	0,180	0,140	–0,030	746	0,180	0,140	–0,030
727	0,180	0,140	0,020	737	0,180	0,110	–0,030	747	0,230	0,110	–0,030
728	0,180	0,140	–0,010	738	0,180	0,110	–0,010	748	0,180	0,140	–0,050
729	0,180	0,110	–0,010	739	0,180	0,110	–0,050	749	0,180	0,110	–0,050
730	0,180	0,140	–0,010	740	0,180	0,110	–0,050	750	0,180	0,070	–0,030

N o t e : The following notation is used in "Measured acceleration value" columns:

a_x, a_y, a_z — acceleration components of a vehicle point where the acceleration sensor is secured, along the principle axes of the vehicle (x for longitudinal, y for transversal, z for vertical).

C.2 Reference set of data No. 2

T a b l e C.2.1 — Basic parameters for reference set of data No. 2

Accident type	Frontal (head-on) collision of low severity
ASI_{15} index (as per GOST R 54620)	less than 1.8
Direction details (coordinate system in accordance with [3])	Acceleration backwards (deceleration) — "+X" axis Acceleration forwards — "-X" axis Acceleration to right — "+Y" axis Acceleration to left — "-Y" axis Acceleration upwards — "+Z" axis Acceleration downwards — "-Z" axis
Acceleration profile recording interval, s	7.5
Number of measurements	750
Acceleration profile units	*G* (gravity acceleration)
Sample rate, Hz	100

Table C.2.2 — Acceleration profile for reference set of data No. 2 Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
1	–0,300	0,000	0,210	21	–0,200	0,000	0,000	41	–0,200	0,100	–0,360
2	–0,200	0,000	0,000	22	–0,200	0,000	0,000	42	–0,200	0,100	–0,360
3	–0,200	0,000	0,000	23	–0,200	0,100	–0,190	43	–0,200	0,000	–0,360
4	–0,300	0,000	0,000	24	–0,200	0,000	0,210	44	–0,200	0,000	–0,190
5	–0,300	0,100	0,000	25	–0,200	0,000	0,000	45	–0,200	0,000	–0,190
6	–0,200	0,000	0,000	26	–0,200	0,100	0,210	46	–0,200	0,000	–0,190
7	–0,300	0,100	0,000	27	–0,200	0,000	0,210	47	–0,200	0,000	–0,190
8	–0,200	0,000	0,000	28	–0,200	0,100	0,210	48	–0,200	0,000	–0,190
9	–0,200	0,100	0,000	29	–0,200	0,000	0,000	49	–0,200	0,000	0,000
10	–0,300	0,000	0,000	30	–0,200	0,100	–0,190	50	–0,300	0,000	0,000
11	–0,200	0,100	–0,190	31	–0,200	0,100	–0,190	51	–0,200	0,000	0,000
12	–0,300	0,000	–0,190	32	–0,200	0,100	–0,190	52	–0,200	0,000	0,210
13	–0,200	0,100	–0,190	33	–0,200	0,100	0,000	53	–0,200	0,000	0,210
14	–0,200	0,000	0,000	34	–0,300	0,000	0,000	54	–0,200	0,000	0,210
15	–0,200	0,000	0,000	35	–0,200	0,100	0,000	55	–0,200	0,000	0,000
16	–0,200	0,000	0,000	36	–0,200	0,100	0,000	56	–0,200	0,000	0,000
17	–0,200	0,000	0,000	37	–0,200	0,100	–0,190	57	–0,200	0,000	0,000
18	–0,200	0,000	0,000	38	–0,200	0,000	–0,360	58	–0,200	–0,100	0,000
19	–0,200	0,000	0,000	39	–0,200	0,100	–0,360	59	–0,200	0,000	0,000
20	–0,200	0,000	0,000	40	–0,200	0,100	–0,360	60	–0,200	–0,100	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
61	–0,200	0,000	0,000	81	–0,200	0,000	–0,190	101	–0,200	0,000	0,000
62	–0,200	0,000	0,000	82	–0,100	0,100	0,000	102	–0,200	0,000	0,000
63	–0,200	0,000	0,000	83	–0,300	0,000	0,000	103	–0,200	0,000	0,000
64	–0,200	0,000	–0,190	84	–0,200	0,000	–0,190	104	–0,100	0,000	–0,190
65	–0,200	0,000	–0,190	85	–0,200	0,100	0,000	105	–0,200	0,000	0,000
66	–0,200	0,100	0,000	86	–0,100	0,200	–0,360	106	–0,200	0,000	0,210
67	–0,200	0,000	0,210	87	–0,200	0,100	–0,360	107	–0,200	0,000	0,210
68	–0,100	0,000	0,210	88	–0,100	0,200	–0,510	108	–0,200	0,000	0,210
69	–0,200	0,000	0,210	89	–0,100	0,200	–0,360	109	–0,200	0,000	0,440
70	–0,200	0,000	0,440	90	–0,100	0,200	–0,190	110	–0,100	0,100	0,440
71	–0,200	–0,100	0,210	91	–0,100	0,200	–0,360	111	–0,100	0,000	0,210
72	–0,300	0,000	0,210	92	–0,100	0,100	–0,190	112	–0,100	0,000	0,210
73	–0,200	0,000	0,000	93	–0,200	0,100	0,000	113	–0,200	–0,100	0,000
74	–0,200	0,100	0,440	94	–0,200	0,100	–0,360	114	–0,200	–0,100	0,210
75	–0,200	0,000	0,210	95	–0,200	0,200	–0,360	115	–0,200	–0,200	0,210
76	–0,200	0,000	0,210	96	–0,300	0,000	–0,360	116	–0,200	–0,100	0,210
77	–0,200	0,000	0,210	97	–0,100	0,000	–0,360	117	–0,100	–0,100	0,210
78	–0,200	0,000	0,000	98	–0,100	0,000	–0,190	118	–0,200	0,000	0,210
79	–0,200	0,000	–0,190	99	–0,200	0,100	0,000	119	–0,200	0,000	0,000
80	–0,200	0,000	–0,190	100	–0,100	0,000	0,000	120	–0,100	0,000	0,210

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
121	–0,200	–0,100	0,210	141	0,000	0,200	–0,360	161	–0,200	0,000	0,000
122	–0,100	–0,100	0,210	142	–0,100	0,200	–0,360	162	–0,200	0,000	0,000
123	–0,300	–0,200	0,440	143	–0,100	0,100	–0,360	163	–0,200	0,000	0,000
124	–0,200	–0,100	0,210	144	–0,100	0,100	–0,190	164	–0,200	0,000	0,000
125	–0,200	–0,100	0,210	145	–0,200	0,100	–0,360	165	–0,200	0,000	0,000
126	–0,300	–0,100	0,210	146	–0,200	0,100	–0,360	166	–0,200	0,000	0,000
127	–0,200	0,000	0,210	147	–0,100	0,100	–0,190	167	–0,200	0,000	0,000
128	–0,100	0,000	0,210	148	–0,200	0,100	–0,190	168	–0,200	0,000	0,000
129	–0,200	0,000	0,210	149	–0,200	0,100	–0,190	169	–0,200	0,000	0,000
130	–0,200	0,000	0,210	150	–0,100	0,100	–0,190	170	–0,200	0,000	0,210
131	–0,100	0,000	–0,190	151	–0,200	0,000	–0,190	171	–0,100	0,000	0,210
132	–0,100	0,100	0,000	152	–0,200	0,000	0,000	172	–0,100	0,000	0,210
133	–0,200	0,000	0,000	153	–0,200	0,000	0,210	173	–0,200	0,000	0,210
134	–0,200	0,000	–0,190	154	–0,200	0,000	0,000	174	–0,200	0,000	0,210
135	–0,200	0,000	–0,190	155	–0,200	0,000	0,210	175	–0,200	0,000	0,000
136	–0,200	0,100	0,000	156	–0,200	0,000	0,000	176	–0,200	0,000	0,210
137	–0,200	0,100	–0,190	157	–0,200	0,000	0,000	177	–0,200	–0,100	0,000
138	–0,200	0,100	–0,360	158	–0,200	0,000	–0,190	178	–0,200	0,000	0,000
139	–0,200	0,100	–0,360	159	–0,200	0,000	–0,190	179	–0,200	0,000	0,000
140	–0,100	0,200	–0,360	160	–0,200	0,000	–0,190	180	–0,200	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
181	–0,100	0,000	–0,190	201	–0,200	0,000	0,000	221	–0,100	0,100	0,210
182	–0,200	0,000	0,000	202	–0,200	0,000	0,000	222	–0,200	0,000	0,210
183	–0,100	0,000	0,000	203	–0,200	–0,100	0,000	223	–0,200	0,100	0,690
184	–0,100	0,000	0,000	204	–0,200	0,000	0,210	224	–0,200	0,000	0,210
185	–0,200	0,000	0,000	205	–0,300	0,000	0,210	225	–0,200	0,000	0,210
186	–0,200	0,000	0,000	206	–0,200	0,000	0,000	226	–0,200	–0,100	0,000
187	–0,200	0,000	0,000	207	–0,100	0,000	–0,190	227	–0,200	0,000	0,000
188	–0,200	0,000	0,000	208	–0,200	0,000	–0,190	228	–0,200	0,000	0,000
189	–0,200	0,000	–0,190	209	–0,200	0,000	–0,190	229	–0,200	0,000	0,210
190	–0,200	0,000	–0,190	210	–0,200	0,000	–0,360	230	–0,200	0,100	0,440
191	–0,100	0,100	0,000	211	–0,200	0,000	–0,510	231	–0,100	0,000	0,440
192	–0,200	0,100	–0,190	212	–0,200	0,000	–0,510	232	–0,200	0,000	0,440
193	–0,200	0,100	–0,190	213	–0,100	0,100	–0,360	233	–0,200	0,000	0,210
194	–0,100	0,000	–0,360	214	–0,100	0,100	–0,360	234	–0,100	0,100	0,210
195	–0,100	0,100	–0,190	215	–0,200	0,000	0,000	235	–0,200	0,000	0,000
196	–0,200	0,000	–0,360	216	–0,200	0,000	–0,190	236	–0,200	0,000	0,000
197	–0,100	0,100	–0,190	217	–0,100	0,000	0,000	237	–0,200	0,000	0,000
198	–0,200	0,000	–0,190	218	–0,200	0,000	–0,360	238	–0,200	0,100	0,210
199	–0,200	0,100	0,000	219	–0,100	0,000	–0,190	239	–0,300	0,000	0,210
200	–0,200	0,000	0,000	220	–0,100	0,000	–0,190	240	–0,100	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
241	–0,200	0,000	0,210	261	–0,100	0,000	0,000	281	–0,200	–0,100	–0,190
242	–0,200	0,000	0,000	262	–0,200	0,000	0,000	282	–0,100	0,000	–0,360
243	–0,200	0,000	–0,190	263	–0,100	0,000	–0,190	283	–0,200	0,000	0,000
244	–0,200	0,000	–0,190	264	–0,100	0,000	–0,190	284	–0,100	0,100	0,210
245	–0,200	0,000	–0,190	265	–0,100	0,000	–0,190	285	–0,200	0,100	0,210
246	–0,100	0,000	0,000	266	–0,100	0,100	–0,190	286	–0,100	–0,100	0,000
247	–0,100	0,000	0,000	267	0,000	0,100	–0,190	287	–0,200	0,200	0,000
248	–0,100	0,000	–0,190	268	–0,100	0,000	–0,190	288	–0,200	0,000	–0,190
249	–0,200	0,000	–0,190	269	–0,200	0,000	0,210	289	–0,200	0,100	–0,190
250	–0,200	0,000	–0,190	270	–0,200	0,000	0,000	290	–0,300	0,000	0,000
251	–0,200	0,000	–0,190	271	–0,100	0,000	–0,190	291	–0,100	0,000	–0,190
252	–0,100	0,000	0,000	272	–0,200	0,000	0,210	292	–0,100	0,000	0,000
253	–0,100	0,000	0,000	273	–0,200	0,000	0,210	293	–0,200	0,100	0,000
254	–0,100	0,000	0,000	274	–0,100	0,000	0,000	294	–0,200	0,000	0,000
255	–0,200	0,000	0,000	275	–0,200	0,000	0,210	295	–0,200	0,100	0,000
256	–0,200	0,000	0,000	276	–0,200	0,000	0,000	296	–0,200	0,000	–0,190
257	–0,200	0,000	0,000	277	–0,100	0,000	–0,190	297	–0,200	0,100	–0,190
258	–0,200	0,000	0,000	278	–0,200	0,000	0,000	298	–0,100	0,100	–0,360
259	–0,100	0,000	0,000	279	–0,200	0,000	0,000	299	–0,100	0,000	0,000
260	–0,100	0,000	0,000	280	–0,100	0,000	–0,190	300	–0,100	0,000	0,210

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
301	–0,200	0,000	0,210	321	–0,200	0,000	0,000	341	–0,100	0,100	0,000
302	–0,200	0,000	0,000	322	–0,200	0,000	–0,190	342	–0,200	0,000	0,210
303	–0,200	0,000	0,000	323	–0,200	0,000	–0,360	343	–0,200	0,000	0,210
304	–0,100	0,000	–0,190	324	–0,300	0,000	–0,360	344	–0,200	0,000	0,000
305	–0,100	0,000	–0,190	325	–0,100	0,000	–0,360	345	–0,200	0,100	–0,190
306	–0,200	0,000	0,000	326	–0,100	0,000	–0,190	346	–0,100	0,000	0,000
307	–0,200	0,000	0,210	327	–0,200	0,000	0,210	347	–0,100	0,100	0,210
308	–0,100	0,000	0,000	328	–0,200	0,000	0,210	348	–0,200	0,000	0,210
309	–0,200	0,000	0,000	329	–0,200	0,000	0,000	349	–0,200	0,000	0,000
310	–0,200	0,000	0,000	330	–0,200	0,000	–0,190	350	–0,200	0,000	–0,190
311	–0,200	0,000	0,000	331	–0,200	0,000	–0,360	351	–0,200	0,000	0,000
312	–0,100	0,000	–0,190	332	–0,100	0,000	–0,360	352	–0,200	0,000	0,000
313	–0,200	0,000	0,000	333	–0,100	0,000	–0,190	353	–0,100	0,000	0,000
314	–0,200	0,000	0,000	334	–0,200	0,000	0,210	354	–0,200	0,000	0,210
315	–0,100	0,000	0,000	335	–0,100	0,000	0,210	355	–0,200	0,000	0,440
316	–0,200	0,000	0,000	336	–0,200	0,000	0,210	356	–0,100	0,000	0,210
317	–0,200	0,000	0,000	337	–0,200	0,000	0,210	357	–0,100	0,000	0,210
318	–0,200	0,000	0,000	338	–0,100	0,000	0,000	358	–0,100	0,000	0,000
319	–0,100	0,000	0,000	339	–0,100	0,000	0,000	359	–0,100	0,000	–0,190
320	–0,200	0,000	0,000	340	–0,100	0,000	–0,190	360	–0,200	0,100	–0,360

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
361	–0,200	0,100	–0,360	381	0,000	0,100	0,000	401	6,900	0,300	1,300
362	–0,200	0,100	–0,190	382	–0,100	0,000	0,210	402	10,200	2,700	2,800
363	–0,100	0,000	–0,190	383	–0,300	0,000	0,210	403	7,200	0,900	1,250
364	–0,100	0,000	0,000	384	–0,200	0,000	–0,190	404	5,100	–0,600	–1,000
365	–0,200	0,000	0,000	385	–0,100	0,000	–0,510	405	3,700	0,000	–0,510
366	–0,200	0,100	0,000	386	–0,200	0,000	–0,360	406	–0,100	–0,300	3,000
367	–0,200	0,000	–0,360	387	–0,200	0,000	–0,190	407	–0,200	–1,100	0,690
368	–0,200	0,000	–0,360	388	–0,100	0,000	0,000	408	–0,400	–0,300	0,440
369	–0,200	0,000	–0,190	389	–0,200	0,000	0,210	409	–1,000	–0,400	0,210
370	–0,200	0,000	–0,190	390	–0,200	0,000	0,440	410	–0,200	–0,200	–1,000
371	–0,100	0,000	0,210	391	–0,200	0,000	0,440	411	0,100	–0,300	–1,000
372	–0,200	0,000	0,440	392	–0,200	0,000	0,210	412	0,300	–0,100	–0,640
373	–0,100	0,000	0,440	393	–0,200	0,000	0,000	413	–0,200	–0,100	–0,750
374	–0,100	0,000	0,210	394	–0,100	0,000	–0,360	414	0,000	–0,600	0,690
375	–0,100	0,000	0,000	395	0,000	0,000	–0,360	415	–0,100	–0,300	2,240
376	–0,100	0,000	–0,190	396	0,300	0,000	–0,190	416	–0,100	–0,800	0,440
377	–0,200	0,000	–0,190	397	0,800	–0,100	0,000	417	0,100	–0,700	0,000
378	–0,200	0,000	–0,360	398	3,500	–0,500	1,500	418	0,200	–0,300	–0,190
379	–0,200	0,000	–0,360	399	4,100	0,600	0,690	419	–0,100	–0,300	–0,640
380	–0,200	0,000	0,000	400	10,300	–0,500	2,600	420	–0,200	–0,100	–0,910

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
421	–0,200	–0,200	–0,360	441	–0,200	0,000	0,210	461	–0,100	0,200	0,000
422	–0,100	–0,400	0,000	442	–0,200	–0,100	0,210	462	–0,300	0,100	0,210
423	0,000	–0,300	0,690	443	–0,400	–0,100	0,210	463	–0,300	0,200	0,000
424	–0,100	–0,400	1,890	444	–0,500	0,000	0,000	464	–0,200	0,300	–0,190
425	0,000	–0,300	1,560	445	–0,600	0,100	–0,190	465	–0,100	0,200	–0,190
426	–0,100	–0,300	1,250	446	–0,500	0,100	–0,360	466	–0,100	0,300	0,000
427	–0,100	–0,200	0,960	447	–0,200	0,100	–0,640	467	–0,100	0,200	0,210
428	0,100	–0,100	0,210	448	–0,100	0,000	–0,640	468	–0,200	0,200	0,210
429	0,000	–0,100	0,210	449	–0,300	0,000	–0,640	469	–0,200	0,200	0,210
430	–0,200	–0,100	0,440	450	–0,600	0,000	–0,190	470	–0,200	0,100	0,210
431	–0,300	–0,100	0,690	451	–0,700	0,200	0,000	471	–0,200	0,100	–0,190
432	–0,400	–0,100	1,250	452	–0,700	0,100	–0,190	472	–0,200	0,100	–0,190
433	–0,200	–0,100	0,960	453	–0,300	0,200	–0,190	473	–0,200	0,100	–0,360
434	–0,100	–0,100	0,960	454	–0,200	0,100	–0,360	474	–0,200	0,100	–0,360
435	0,000	0,000	0,960	455	–0,100	0,100	–0,510	475	–0,200	0,100	–0,360
436	0,000	–0,100	0,210	456	–0,200	0,200	–0,510	476	–0,200	0,100	–0,190
437	0,000	–0,100	0,000	457	–0,300	0,200	–0,510	477	–0,200	0,000	–0,190
438	–0,200	0,000	0,000	458	–0,300	0,200	–0,360	478	–0,200	0,000	0,000
439	–0,300	0,000	0,210	459	–0,200	0,200	–0,190	479	–0,300	–0,100	0,000
440	–0,100	0,000	0,000	460	–0,200	0,100	0,000	480	–0,300	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
481	–0,300	0,000	–0,190	501	–0,100	0,000	0,210	521	–0,300	0,000	–0,190
482	–0,100	0,000	–0,360	502	–0,100	0,000	0,210	522	–0,300	0,000	–0,190
483	0,100	0,100	–0,360	503	–0,200	0,000	0,210	523	–0,200	0,000	–0,190
484	–0,200	–0,200	–0,360	504	–0,100	0,000	0,210	524	–0,200	0,000	–0,190
485	–0,300	0,000	–0,190	505	–0,100	0,000	0,210	525	–0,200	0,000	–0,190
486	–0,500	–0,100	0,000	506	–0,100	0,000	0,210	526	–0,200	0,000	–0,190
487	–0,500	0,000	0,210	507	–0,200	0,000	0,000	527	–0,200	0,000	–0,190
488	–0,300	0,000	0,000	508	–0,200	0,000	–0,190	528	–0,200	0,000	–0,190
489	–0,200	0,000	0,000	509	–0,200	0,000	–0,190	529	–0,200	0,000	0,000
490	–0,100	–0,100	–0,190	510	–0,200	0,100	–0,190	530	–0,200	0,000	0,000
491	–0,100	–0,100	–0,190	511	–0,200	0,100	0,000	531	–0,200	0,000	0,000
492	–0,200	–0,100	0,000	512	–0,200	0,000	0,000	532	–0,200	0,100	0,000
493	–0,200	–0,100	0,000	513	–0,200	0,000	0,000	533	–0,200	0,100	0,000
494	–0,300	–0,100	0,000	514	–0,300	0,000	0,000	534	–0,200	0,100	0,000
495	–0,300	0,000	0,210	515	–0,300	0,000	0,000	535	–0,200	0,100	0,000
496	–0,300	0,000	0,210	516	–0,300	0,000	–0,190	536	–0,200	0,100	0,000
497	–0,200	0,000	0,210	517	–0,300	0,000	–0,190	537	–0,200	0,100	0,000
498	–0,200	0,000	0,210	518	–0,300	0,000	–0,190	538	–0,200	0,100	0,000
499	–0,100	0,000	0,210	519	–0,300	0,000	–0,190	539	–0,200	0,100	0,000
500	–0,100	0,000	0,000	520	–0,300	0,000	–0,190	540	–0,200	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
541	–0,200	0,000	0,000	561	–0,200	0,000	0,000	581	–0,200	0,000	0,000
542	–0,200	0,000	0,000	562	–0,200	0,000	0,000	582	–0,200	0,000	0,000
543	–0,200	0,000	0,000	563	–0,200	0,000	0,000	583	–0,200	0,000	0,000
544	–0,200	0,000	0,000	564	–0,200	0,000	0,000	584	–0,200	0,000	0,000
545	–0,200	0,000	0,000	565	–0,200	0,000	0,000	585	–0,200	0,000	0,000
546	–0,200	0,000	0,000	566	–0,100	0,000	0,000	586	–0,200	0,000	0,000
547	–0,300	0,000	–0,190	567	–0,200	0,000	0,000	587	–0,200	0,000	0,000
548	–0,200	0,000	0,000	568	–0,200	0,000	0,000	588	–0,200	0,000	0,000
549	–0,300	0,000	–0,190	569	–0,200	0,000	0,000	589	–0,200	0,000	0,000
550	–0,200	0,000	–0,190	570	–0,100	0,000	0,000	590	–0,200	0,000	0,000
551	–0,200	0,000	–0,190	571	–0,200	0,000	0,000	591	–0,200	0,000	0,000
552	–0,200	0,000	0,000	572	–0,200	0,100	0,000	592	–0,200	0,000	0,000
553	–0,200	0,000	0,000	573	–0,200	0,000	0,000	593	–0,200	0,000	0,000
554	–0,200	0,000	0,000	574	–0,200	0,000	0,000	594	–0,200	0,000	0,000
555	–0,200	0,000	0,000	575	–0,200	0,000	0,000	595	–0,200	0,000	0,000
556	–0,200	0,000	0,000	576	–0,200	0,000	0,000	596	–0,200	0,000	0,000
557	–0,200	0,000	0,000	577	–0,200	0,000	0,000	597	–0,200	0,000	0,000
558	–0,200	0,000	0,000	578	–0,200	0,000	0,000	598	–0,200	0,000	0,000
559	–0,200	0,000	0,000	579	–0,200	0,000	0,000	599	–0,200	0,000	0,000
560	–0,200	0,000	0,000	580	–0,200	0,000	0,000	600	–0,200	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
601	–0,200	0,000	0,000	621	–0,200	0,000	0,000	641	–0,200	0,000	0,000
602	–0,200	0,000	0,000	622	–0,200	0,000	0,000	642	–0,200	0,000	0,000
603	–0,200	0,000	0,000	623	–0,200	0,000	0,000	643	–0,200	0,000	0,000
604	–0,200	0,000	0,000	624	–0,200	0,000	0,000	644	–0,200	0,000	0,000
605	–0,200	0,000	0,000	625	–0,200	0,000	0,000	645	–0,200	0,000	0,000
606	–0,200	0,000	0,000	626	–0,200	0,000	0,000	646	–0,200	0,000	0,000
607	–0,200	0,000	0,000	627	–0,200	0,000	0,000	647	–0,200	0,000	0,000
608	–0,200	0,000	0,000	628	–0,200	0,000	0,000	648	–0,200	0,000	0,000
609	–0,200	0,000	0,000	629	–0,200	0,000	0,000	649	–0,200	0,000	0,000
610	–0,200	0,000	0,000	630	–0,100	0,000	0,000	650	–0,200	0,000	0,000
611	–0,200	0,000	0,000	631	–0,100	0,000	0,000	651	–0,200	0,000	0,000
612	–0,200	0,000	0,000	632	–0,100	0,000	0,000	652	–0,200	0,000	0,000
613	–0,200	0,000	0,000	633	–0,100	0,000	0,000	653	–0,200	0,000	0,000
614	–0,200	0,000	0,000	634	–0,200	0,000	0,000	654	–0,200	0,000	0,000
615	–0,200	0,000	0,000	635	–0,100	0,000	0,000	655	–0,200	0,000	0,000
616	–0,200	0,000	0,000	636	–0,100	0,000	0,000	656	–0,200	0,000	0,000
617	–0,200	0,000	0,000	637	–0,100	0,000	0,000	657	–0,200	0,000	0,000
618	–0,200	0,000	0,000	638	–0,100	0,000	0,000	658	–0,200	0,000	0,000
619	–0,200	0,000	0,000	639	–0,200	0,000	0,000	659	–0,200	0,000	0,000
620	–0,200	0,000	0,000	640	–0,200	0,000	0,000	660	–0,200	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
661	–0,200	0,000	0,000	681	–0,200	0,000	0,000	701	–0,200	0,000	0,000
662	–0,200	0,000	0,000	682	–0,200	0,000	0,000	702	–0,200	0,000	0,000
663	–0,200	0,000	0,000	683	–0,200	0,000	0,000	703	–0,200	0,000	0,000
664	–0,200	0,000	0,000	684	–0,200	0,000	0,000	704	–0,200	0,000	0,000
665	–0,200	0,000	0,000	685	–0,200	0,000	0,000	705	–0,200	0,000	0,000
666	–0,200	0,000	0,000	686	–0,200	0,000	0,000	706	–0,200	0,000	0,000
667	–0,200	0,000	0,000	687	–0,200	0,000	0,000	707	–0,200	0,000	0,000
668	–0,200	0,000	0,000	688	–0,200	0,000	0,000	708	–0,200	0,000	0,000
669	–0,200	0,000	0,000	689	–0,200	0,000	0,000	709	–0,200	0,000	0,000
670	–0,200	0,000	0,000	690	–0,200	0,000	0,000	710	–0,200	0,000	0,000
671	–0,200	0,000	0,000	691	–0,200	0,000	0,000	711	–0,200	0,000	0,000
672	–0,200	0,000	0,000	692	–0,200	0,000	0,000	712	–0,200	0,000	0,000
673	–0,200	0,000	0,000	693	–0,200	0,000	0,000	713	–0,200	0,000	0,000
674	–0,200	0,000	0,000	694	–0,200	0,000	0,000	714	–0,200	0,000	0,000
675	–0,200	0,000	0,000	695	–0,200	0,000	0,000	715	–0,200	0,000	0,000
676	–0,200	0,000	0,000	696	–0,200	0,000	0,000	716	–0,200	0,000	0,000
677	–0,200	0,000	0,000	697	–0,200	0,000	0,000	717	–0,200	0,000	0,000
678	–0,200	0,000	0,000	698	–0,200	0,000	0,000	718	–0,200	0,000	0,000
679	–0,200	0,000	0,000	699	–0,200	0,000	0,000	719	–0,200	0,000	0,000
680	–0,200	0,000	0,000	700	–0,200	0,000	0,000	720	–0,200	0,000	0,000

Table C.2.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
721	–0,200	0,000	0,000	731	–0,200	0,000	0,000	741	–0,200	0,000	0,000
722	–0,200	0,000	0,000	732	–0,200	0,000	0,000	742	–0,200	0,000	0,000
723	–0,200	0,000	0,000	733	–0,200	0,000	0,000	743	–0,200	0,000	0,000
724	–0,200	0,000	0,000	734	–0,200	0,000	0,000	744	–0,200	0,000	0,000
725	–0,200	0,000	0,000	735	–0,200	0,000	0,000	745	–0,200	0,000	0,000
726	–0,200	0,000	0,000	736	–0,200	0,000	0,000	746	–0,200	0,000	0,000
727	–0,200	0,000	0,000	737	–0,200	0,000	0,000	747	–0,200	0,000	0,000
728	–0,200	0,000	0,000	738	–0,200	0,000	0,000	748	–0,200	0,000	0,000
729	–0,200	0,000	0,000	739	–0,200	0,000	0,000	749	–0,200	0,000	0,000
730	–0,200	0,000	0,000	740	–0,200	0,000	0,000	750	–0,200	0,000	0,000

N o t e : The following notation is used in "Measured acceleration value" columns:

a_x, a_y, a_z — acceleration components of a vehicle point where the acceleration sensor is secured, along the principle axes of the vehicle (x for longitudinal, y for transversal, z for vertical).

C.3 Reference set of data No. 3

Table C.3.1 — Basic parameters for reference set of data No. 3

Accident type	Side collision of high severity
ASI_{15} index (as per GOST R 54620)	Greater than (equal to) 1,8
Direction details (coordinate system in accordance with [3])	Acceleration backwards (deceleration) — "+X" axis Acceleration forwards — "-X" axis Acceleration to right — "+Y" axis Acceleration to left — "-Y" axis Acceleration upwards — "+Z" axis Acceleration downwards — "-Z" axis
Acceleration profile recording interval, s	7.5
Number of measurements	750
Acceleration profile units	*g* (gravity acceleration)
Sample rate, Hz	100

Table C.3.2 — Acceleration profile for reference set of data No. 3 Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
1	–0,006	0,102	0,000	21	–0,006	0,083	0,000	41	–0,006	0,101	0,000
2	–0,006	0,085	0,000	22	–0,006	0,101	0,000	42	–0,006	0,102	0,000
3	–0,006	0,085	0,000	23	–0,006	0,104	0,000	43	–0,006	0,104	0,000
4	–0,006	0,104	0,000	24	–0,006	0,085	0,000	44	–0,006	0,101	0,000
5	–0,006	0,083	0,000	25	–0,006	0,102	0,000	45	–0,006	0,101	0,000
6	–0,006	0,085	0,000	26	–0,006	0,104	0,000	46	–0,006	0,082	0,000
7	–0,006	0,101	0,000	27	–0,006	0,101	0,000	47	–0,006	0,101	0,000
8	–0,006	0,085	0,000	28	–0,006	0,101	0,000	48	–0,006	0,104	0,000
9	–0,006	0,085	0,000	29	–0,006	0,104	0,000	49	–0,006	0,104	0,000
10	–0,006	0,104	0,000	30	–0,006	0,101	0,000	50	–0,006	0,101	0,000
11	–0,006	0,082	0,000	31	–0,006	0,101	0,000	51	–0,006	0,102	0,000
12	–0,006	0,085	0,000	32	–0,006	0,104	0,000	52	–0,006	0,104	0,000
13	–0,006	0,085	0,000	33	–0,006	0,083	0,000	53	–0,006	0,102	0,000
14	–0,006	0,083	0,000	34	–0,006	0,101	0,000	54	–0,006	0,085	0,000
15	–0,006	0,085	0,000	35	–0,006	0,083	0,000	55	–0,006	0,082	0,000
16	–0,006	0,083	0,000	36	–0,006	0,082	0,000	56	–0,006	0,085	0,000
17	–0,006	0,085	0,000	37	–0,006	0,101	0,000	57	–0,006	0,101	0,000
18	–0,006	0,083	0,000	38	–0,006	0,082	0,000	58	–0,006	0,101	0,000
19	–0,006	0,104	0,000	39	–0,006	0,101	0,000	59	–0,006	0,104	0,000
20	–0,006	0,101	0,000	40	–0,006	0,085	0,000	60	–0,006	0,085	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
61	–0,006	0,085	0,000	81	–0,006	0,082	0,000	101	–0,006	0,085	0,000
62	–0,006	0,085	0,000	82	–0,006	0,083	0,000	102	–0,006	0,104	0,000
63	–0,006	0,104	0,000	83	–0,006	0,082	0,000	103	–0,006	0,082	0,000
64	–0,006	0,102	0,000	84	–0,006	0,082	0,000	104	–0,006	0,083	0,000
65	–0,006	0,082	0,000	85	–0,006	0,104	0,000	105	–0,006	0,101	0,000
66	–0,006	0,104	0,000	86	–0,006	0,101	0,000	106	–0,006	0,085	0,000
67	–0,006	0,082	0,000	87	–0,006	0,083	0,000	107	–0,006	0,082	0,000
68	–0,006	0,085	0,000	88	–0,006	0,085	0,000	108	–0,006	0,085	0,000
69	–0,006	0,082	0,000	89	–0,006	0,101	0,000	109	–0,006	0,082	0,000
70	–0,006	0,104	0,000	90	–0,006	0,101	0,000	110	–0,006	0,104	0,000
71	–0,006	0,101	0,000	91	–0,006	0,082	0,000	111	–0,006	0,102	0,000
72	–0,006	0,085	0,000	92	–0,006	0,101	0,000	112	–0,006	0,101	0,000
73	–0,006	0,082	0,000	93	–0,006	0,101	0,000	113	–0,006	0,082	0,000
74	–0,006	0,104	0,000	94	–0,006	0,085	0,000	114	–0,006	0,085	0,000
75	–0,006	0,082	0,000	95	–0,006	0,104	0,000	115	–0,006	0,085	0,000
76	–0,006	0,082	0,000	96	–0,006	0,083	0,000	116	–0,006	0,085	0,000
77	–0,006	0,101	0,000	97	–0,006	0,104	0,000	117	–0,006	0,082	0,000
78	–0,006	0,085	0,000	98	–0,006	0,102	0,000	118	–0,006	0,085	0,000
79	–0,006	0,104	0,000	99	–0,006	0,102	0,000	119	–0,006	0,104	0,000
80	–0,006	0,104	0,000	100	–0,006	0,101	0,000	120	–0,006	0,104	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
121	–0,006	0,082	0,000	141	–0,006	0,085	0,000	161	–0,006	0,085	0,000
122	–0,006	0,083	0,000	142	–0,006	0,083	0,000	162	–0,006	0,101	0,000
123	–0,006	0,083	0,000	143	–0,006	0,101	0,000	163	–0,006	0,101	0,000
124	–0,006	0,101	0,000	144	–0,006	0,083	0,000	164	–0,006	0,102	0,000
125	–0,006	0,085	0,000	145	–0,006	0,104	0,000	165	–0,006	0,102	0,000
126	–0,006	0,085	0,000	146	–0,006	0,082	0,000	166	–0,006	0,104	0,000
127	–0,006	0,085	0,000	147	–0,006	0,085	0,000	167	–0,006	0,082	0,000
128	–0,006	0,104	0,000	148	–0,006	0,085	0,000	168	–0,006	0,085	0,000
129	–0,006	0,082	0,000	149	–0,006	0,082	0,000	169	–0,006	0,101	0,000
130	–0,006	0,085	0,000	150	–0,006	0,104	0,000	170	–0,006	0,101	0,000
131	–0,006	0,085	0,000	151	–0,006	0,101	0,000	171	–0,006	0,101	0,000
132	–0,006	0,104	0,000	152	–0,006	0,104	0,000	172	–0,006	0,085	0,000
133	–0,006	0,085	0,000	153	–0,006	0,101	0,000	173	–0,006	0,085	0,000
134	–0,006	0,083	0,000	154	–0,006	0,083	0,000	174	–0,006	0,104	0,000
135	–0,006	0,082	0,000	155	–0,006	0,085	0,000	175	–0,006	0,101	0,000
136	–0,006	0,102	0,000	156	–0,006	0,102	0,000	176	–0,006	0,101	0,000
137	–0,006	0,104	0,000	157	–0,006	0,083	0,000	177	–0,006	0,085	0,000
138	–0,006	0,085	0,000	158	–0,006	0,083	0,000	178	–0,006	0,101	0,000
139	–0,006	0,101	0,000	159	–0,006	0,085	0,000	179	–0,006	0,104	0,000
140	–0,006	0,101	0,000	160	–0,006	0,083	0,000	180	–0,006	0,083	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
181	–0,006	0,085	0,000	201	–0,006	0,085	0,000	221	–0,006	0,101	0,000
182	–0,006	0,083	0,000	202	–0,006	0,104	0,000	222	–0,006	0,101	0,000
183	–0,006	0,104	0,000	203	–0,006	0,101	0,000	223	–0,006	0,083	0,000
184	–0,006	0,101	0,000	204	–0,006	0,104	0,000	224	–0,006	0,085	0,000
185	–0,006	0,104	0,000	205	–0,006	0,102	0,000	225	–0,006	0,082	0,000
186	–0,006	0,104	0,000	206	–0,006	0,085	0,000	226	–0,006	0,104	0,000
187	–0,006	0,102	0,000	207	–0,006	0,083	0,000	227	–0,006	0,082	0,000
188	–0,006	0,104	0,000	208	–0,006	0,083	0,000	228	–0,006	0,082	0,000
189	–0,006	0,104	0,000	209	–0,006	0,104	0,000	229	–0,006	0,101	0,000
190	–0,006	0,082	0,000	210	–0,006	0,104	0,000	230	–0,006	0,104	0,000
191	–0,006	0,101	0,000	211	–0,006	0,082	0,000	231	–0,006	0,101	0,000
192	–0,006	0,101	0,000	212	–0,006	0,104	0,000	232	–0,006	0,101	0,000
193	–0,006	0,101	0,000	213	–0,006	0,104	0,000	233	–0,006	0,085	0,000
194	–0,006	0,082	0,000	214	–0,006	0,104	0,000	234	–0,006	0,085	0,000
195	–0,006	0,102	0,000	215	–0,006	0,101	0,000	235	–0,006	0,104	0,000
196	–0,006	0,101	0,000	216	–0,006	0,104	0,000	236	–0,006	0,101	0,000
197	–0,006	0,083	0,000	217	–0,006	0,104	0,000	237	–0,006	0,085	0,000
198	–0,006	0,104	0,000	218	–0,006	0,104	0,000	238	–0,006	0,082	0,000
199	–0,006	0,104	0,000	219	–0,006	0,085	0,000	239	–0,006	0,083	0,000
200	–0,006	0,104	0,000	220	–0,006	0,102	0,000	240	–0,006	0,082	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
241	–0,006	0,082	0,000	261	–0,006	0,083	0,000	281	–0,006	0,083	0,000
242	–0,006	0,104	0,000	262	–0,006	0,102	0,000	282	–0,006	0,102	0,000
243	–0,006	0,104	0,000	263	–0,006	0,101	0,000	283	–0,006	0,101	0,000
244	–0,006	0,101	0,000	264	–0,006	0,101	0,000	284	–0,006	0,082	0,000
245	–0,006	0,085	0,000	265	–0,006	0,083	0,000	285	–0,006	0,083	0,000
246	–0,006	0,085	0,000	266	–0,006	0,101	0,000	286	–0,006	0,101	0,000
247	–0,006	0,101	0,000	267	–0,006	0,082	0,000	287	–0,006	0,104	0,000
248	–0,006	0,102	0,000	268	–0,006	0,101	0,000	288	–0,006	0,101	0,000
249	–0,006	0,101	0,000	269	–0,006	0,104	0,000	289	–0,006	0,102	0,000
250	–0,006	0,082	0,000	270	–0,006	0,104	0,000	290	–0,006	0,101	0,000
251	–0,006	0,104	0,000	271	–0,006	0,104	0,000	291	–0,006	0,104	0,000
252	–0,006	0,083	0,000	272	–0,006	0,102	0,000	292	–0,006	0,104	0,000
253	–0,006	0,102	0,000	273	–0,006	0,085	0,000	293	–0,006	0,085	0,000
254	–0,006	0,102	0,000	274	–0,006	0,101	0,000	294	–0,006	0,082	0,000
255	–0,006	0,082	0,000	275	–0,006	0,102	0,000	295	–0,006	0,102	0,000
256	–0,006	0,082	0,000	276	–0,006	0,101	0,000	296	–0,006	0,085	0,000
257	–0,006	0,101	0,000	277	–0,006	0,101	0,000	297	–0,006	0,083	0,000
258	–0,006	0,101	0,000	278	–0,006	0,085	0,000	298	–0,006	0,102	0,000
259	–0,006	0,082	0,000	279	–0,006	0,101	0,000	299	–0,006	0,104	0,000
260	–0,006	0,082	0,000	280	–0,006	0,101	0,000	300	–0,006	0,083	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
301	–0,006	0,101	0,000	321	–0,006	0,102	0,000	341	–0,006	0,083	0,000
302	–0,006	0,104	0,000	322	–0,006	0,102	0,000	342	–0,006	0,101	0,000
303	–0,006	0,104	0,000	323	–0,006	0,101	0,000	343	–0,006	0,082	0,000
304	–0,006	0,085	0,000	324	–0,006	0,101	0,000	344	–0,006	0,082	0,000
305	–0,006	0,085	0,000	325	–0,006	0,082	0,000	345	–0,006	0,082	0,000
306	–0,006	0,102	0,000	326	–0,006	0,082	0,000	346	–0,006	0,085	0,000
307	–0,006	0,082	0,000	327	–0,006	0,085	0,000	347	–0,006	0,085	0,000
308	–0,006	0,104	0,000	328	–0,006	0,083	0,000	348	–0,006	0,101	0,000
309	–0,006	0,101	0,000	329	–0,006	0,102	0,000	349	–0,006	0,101	0,000
310	–0,006	0,104	0,000	330	–0,006	0,082	0,000	350	–0,006	0,101	0,000
311	–0,006	0,104	0,000	331	–0,006	0,085	0,000	351	–0,006	0,082	0,000
312	–0,006	0,101	0,000	332	–0,006	0,101	0,000	352	–0,006	0,102	0,000
313	–0,006	0,083	0,000	333	–0,006	0,082	0,000	353	–0,006	0,083	0,000
314	–0,006	0,082	0,000	334	–0,006	0,085	0,000	354	–0,006	0,101	0,000
315	–0,006	0,104	0,000	335	–0,006	0,104	0,000	355	–0,006	0,082	0,000
316	–0,006	0,104	0,000	336	–0,006	0,101	0,000	356	–0,006	0,085	0,000
317	–0,006	0,101	0,000	337	–0,006	0,082	0,000	357	–0,006	0,082	0,000
318	–0,006	0,085	0,000	338	–0,006	0,082	0,000	358	–0,006	0,101	0,000
319	–0,006	0,104	0,000	339	–0,006	0,085	0,000	359	–0,006	0,101	0,000
320	–0,006	0,101	0,000	340	–0,006	0,104	0,000	360	–0,006	0,082	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
361	–0,006	0,104	0,000	381	–0,006	0,104	0,000	401	2,228	–16,494	8,244
362	–0,006	0,082	0,000	382	–0,006	0,085	0,000	402	–2,882	–9,224	0,000
363	–0,006	0,102	0,000	383	–0,006	0,085	0,000	403	–1,310	–6,941	11,369
364	–0,006	0,083	0,000	384	–0,006	0,083	0,000	404	–1,634	–0,470	6,408
365	–0,006	0,101	0,000	385	–0,006	0,082	0,000	405	–0,657	–1,106	2,941
366	–0,006	0,083	0,000	386	–0,006	0,085	0,000	406	0,398	0,227	9,056
367	–0,006	0,101	0,000	387	–0,006	0,082	0,000	407	–0,298	0,560	0,324
368	–0,006	0,102	0,000	388	–0,006	0,104	0,000	408	–0,295	–0,376	2,648
369	–0,006	0,104	0,000	389	–0,006	0,085	0,000	409	0,161	1,069	5,604
370	–0,006	0,083	0,000	390	–0,006	0,082	0,000	410	–0,951	1,843	0,000
371	–0,006	0,101	0,000	391	–0,006	0,085	0,000	411	–0,439	1,763	2,894
372	–0,006	0,085	0,000	392	–0,006	0,085	0,000	412	–0,662	1,400	3,389
373	–0,006	0,104	0,000	393	–0,006	0,082	0,000	413	–1,339	1,741	0,000
374	–0,006	0,104	0,000	394	0,352	–0,131	0,000	414	–0,277	1,339	2,010
375	–0,006	0,101	0,000	395	1,049	–3,694	0,015	415	–0,286	0,982	2,065
376	–0,006	0,083	0,000	396	–0,316	–19,098	0,000	416	–0,585	1,675	0,000
377	–0,006	0,082	0,000	397	–0,778	–18,715	0,000	417	–0,301	1,394	1,985
378	–0,006	0,085	0,000	398	3,598	–19,288	2,173	418	–0,411	1,872	0,000
379	–0,006	0,085	0,000	399	–3,110	–18,715	0,000	419	–0,643	1,114	0,000
380	–0,006	0,101	0,000	400	–4,571	–19,480	1,457	420	–0,396	1,824	1,320

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
421	–0,363	1,706	0,000	441	–0,527	1,251	0,001	461	–2,766	10,205	0,030
422	–0,667	1,818	0,000	442	–0,515	1,347	0,043	462	–2,149	–1,877	0,000
423	–0,356	1,278	0,456	443	–0,668	1,187	0,016	463	–3,130	1,747	0,000
424	–0,400	1,520	0,000	444	–0,608	1,085	0,000	464	–1,148	–0,366	0,000
425	–0,645	1,245	0,002	445	–0,369	0,926	0,114	465	–0,204	–2,499	0,000
426	–0,713	1,470	0,041	446	–0,384	0,619	0,001	466	–1,015	–1,374	0,000
427	–0,459	0,862	0,000	447	–0,459	0,610	0,001	467	0,126	–0,427	0,000
428	–0,680	1,238	0,000	448	–0,443	0,701	0,026	468	–0,171	–0,966	0,000
429	–0,447	0,925	0,000	449	–0,513	0,802	0,000	469	–0,166	0,301	0,000
430	–0,768	0,954	0,000	450	–0,509	0,886	0,018	470	0,359	0,323	3,100
431	–0,661	0,992	0,075	451	–0,413	0,963	0,000	471	–0,573	0,037	0,000
432	–0,746	1,030	0,000	452	–0,485	1,557	0,028	472	–0,077	0,402	0,000
433	–0,591	1,136	0,000	453	–3,408	2,219	0,000	473	0,221	–0,317	3,972
434	–0,556	0,963	0,000	454	–3,011	10,766	0,303	474	0,048	0,466	0,000
435	–0,603	0,973	0,000	455	–5,466	1,920	0,000	475	0,117	0,261	0,000
436	–0,539	0,834	0,000	456	–1,021	4,406	0,000	476	0,140	–1,011	1,414
437	–0,567	0,592	0,000	457	1,990	0,701	2,869	477	0,069	–0,723	0,000
438	–0,491	0,907	0,000	458	–2,583	12,165	0,000	478	0,621	–0,883	1,442
439	–0,467	1,168	0,002	459	–5,952	1,986	0,000	479	0,161	–1,491	0,000
440	–0,497	0,853	0,003	460	–4,386	8,232	0,000	480	–0,047	–1,158	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
481	–0,315	–1,482	0,000	501	–0,237	0,555	0,000	521	0,065	–0,086	0,000
482	0,047	–0,835	0,048	502	–0,179	0,458	0,000	522	0,100	0,046	0,000
483	0,074	–0,947	0,019	503	–0,116	0,317	0,000	523	0,113	–0,010	0,000
484	0,117	–0,558	0,093	504	–0,143	0,443	0,010	524	0,087	0,075	0,005
485	0,156	–0,029	0,000	505	–0,059	0,248	0,000	525	0,107	0,285	0,000
486	0,211	0,267	0,016	506	–0,100	0,270	0,000	526	0,083	0,371	0,000
487	0,319	0,760	0,147	507	–0,083	0,211	0,000	527	0,059	0,458	0,008
488	0,164	0,733	0,000	508	–0,012	–0,029	0,003	528	0,035	0,514	0,000
489	0,205	0,747	0,316	509	0,000	0,066	0,001	529	0,035	0,550	0,001
490	0,093	0,870	0,032	510	–0,114	0,066	0,055	530	0,035	0,539	0,001
491	0,107	1,333	0,023	511	–0,063	–0,230	0,000	531	0,018	0,438	0,000
492	0,112	1,280	0,035	512	0,018	–0,298	0,052	532	0,012	0,275	0,000
493	0,054	0,859	0,000	513	–0,053	–0,298	0,000	533	0,018	0,163	0,003
494	–0,058	0,896	0,000	514	–0,012	–0,221	0,000	534	0,000	0,046	0,000
495	0,018	0,382	0,030	515	0,000	–0,240	0,001	535	0,018	0,027	0,002
496	0,058	0,258	0,000	516	–0,006	–0,112	0,000	536	0,047	–0,010	0,002
497	–0,063	0,150	0,021	517	0,012	–0,102	0,000	537	0,047	0,027	0,000
498	–0,135	0,242	0,000	518	0,012	–0,075	0,000	538	0,054	0,066	0,000
499	–0,179	0,261	0,004	519	0,064	–0,029	0,001	539	0,060	0,102	0,000
500	–0,378	0,342	0,000	520	0,059	–0,048	0,000	540	0,029	0,165	0,002

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
541	0,023	0,186	0,001	561	–0,018	0,104	0,000	581	–0,028	0,150	0,000
542	0,000	0,224	0,008	562	–0,012	0,085	0,000	582	–0,033	0,146	0,000
543	–0,006	0,198	0,001	563	0,000	0,083	0,000	583	–0,034	0,133	0,000
544	–0,029	0,182	0,002	564	0,000	0,101	0,000	584	–0,040	0,110	0,000
545	–0,053	0,147	0,002	565	0,012	0,131	0,000	585	–0,034	0,101	0,000
546	–0,059	0,123	0,008	566	0,018	0,154	0,001	586	–0,028	0,101	0,000
547	–0,033	0,066	0,002	567	0,023	0,170	0,001	587	–0,023	0,114	0,000
548	–0,027	0,045	0,002	568	0,000	0,170	0,002	588	–0,023	0,110	0,000
549	–0,040	0,018	0,004	569	0,000	0,178	0,001	589	–0,006	0,128	0,000
550	–0,023	0,008	0,001	570	–0,006	0,155	0,002	590	–0,006	0,139	0,000
551	–0,018	0,000	0,001	571	–0,028	0,146	0,002	591	0,000	0,150	0,001
552	0,012	–0,010	0,000	572	–0,034	0,150	0,001	592	0,000	0,138	0,000
553	0,029	0,018	0,000	573	–0,046	0,141	0,001	593	0,012	0,134	0,001
554	0,029	0,058	0,000	574	–0,053	0,134	0,000	594	0,018	0,101	0,000
555	0,023	0,082	0,000	575	–0,058	0,141	0,000	595	0,018	0,101	0,000
556	0,018	0,131	0,000	576	–0,051	0,138	0,000	596	0,023	0,083	0,000
557	0,000	0,146	0,000	577	–0,046	0,146	0,000	597	0,018	0,114	0,000
558	–0,006	0,150	0,000	578	–0,041	0,134	0,000	598	0,023	0,114	0,000
559	–0,012	0,130	0,000	579	–0,035	0,131	0,000	599	0,018	0,138	0,000
560	–0,018	0,130	0,000	580	–0,035	0,136	0,000	600	0,012	0,141	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
601	0,012	0,019	0,001	621	0,047	0,019	0,000	641	0,023	0,019	0,000
602	0,012	0,019	0,000	622	0,035	0,019	0,002	642	0,035	0,019	0,000
603	0,012	0,019	0,000	623	0,023	0,019	0,001	643	0,035	0,038	0,000
604	0,012	0,019	0,000	624	0,023	0,019	0,008	644	0,035	0,038	0,000
605	0,023	0,019	0,000	625	0,023	0,019	0,001	645	0,035	0,038	0,000
606	0,023	0,019	0,005	626	0,023	0,000	0,002	646	0,047	0,019	0,000
607	0,023	0,019	0,000	627	0,023	0,019	0,002	647	0,059	0,019	0,000
608	0,023	0,038	0,000	628	0,023	0,000	0,008	648	0,035	0,019	0,001
609	0,035	0,019	0,008	629	0,023	0,019	0,002	649	0,023	0,038	0,001
610	0,035	0,038	0,000	630	0,023	0,019	0,002	650	0,047	0,019	0,002
611	0,035	0,019	0,001	631	0,012	0,019	0,004	651	0,035	0,019	0,001
612	0,035	0,038	0,001	632	0,023	0,019	0,001	652	0,023	0,038	0,002
613	0,035	0,038	0,000	633	0,023	0,000	0,001	653	0,035	0,038	0,002
614	0,047	0,038	0,000	634	0,012	0,000	0,000	654	0,035	0,019	0,001
615	0,035	0,038	0,003	635	0,012	0,019	0,000	655	0,047	0,019	0,001
616	0,035	0,038	0,000	636	0,023	0,019	0,000	656	0,035	0,019	0,000
617	0,035	0,038	0,002	637	0,023	0,019	0,000	657	0,035	0,019	0,000
618	0,047	0,019	0,002	638	0,023	0,019	0,000	658	0,023	0,038	0,000
619	0,035	0,019	0,000	639	0,035	0,019	0,000	659	0,023	0,038	0,000
620	0,035	0,038	0,000	640	0,035	0,019	0,000	660	0,023	0,019	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
661	0,035	0,019	0,000	681	0,035	0,056	0,000	701	0,023	0,094	0,000
662	0,012	0,038	0,000	682	0,035	0,056	0,000	702	0,035	0,075	0,000
663	0,023	0,019	0,000	683	0,035	0,075	0,001	703	0,023	0,094	0,000
664	0,012	0,038	0,000	684	0,035	0,075	0,000	704	0,023	0,094	0,002
665	0,012	0,019	0,000	685	0,035	0,075	0,000	705	0,035	0,075	0,001
666	0,012	0,038	0,000	686	0,035	0,056	0,000	706	0,023	0,094	0,008
667	0,023	0,019	0,000	687	0,035	0,075	0,000	707	0,035	0,094	0,001
668	0,012	0,019	0,000	688	0,035	0,075	0,005	708	0,023	0,094	0,002
669	0,023	0,038	0,000	689	0,035	0,075	0,000	709	0,047	0,094	0,002
670	0,023	0,038	0,000	690	0,035	0,075	0,000	710	0,035	0,094	0,008
671	0,023	0,038	0,000	691	0,035	0,075	0,008	711	0,035	0,094	0,002
672	0,023	0,038	0,000	692	0,023	0,075	0,000	712	0,035	0,094	0,002
673	0,023	0,038	0,001	693	0,035	0,075	0,001	713	0,035	0,094	0,004
674	0,023	0,038	0,000	694	0,023	0,075	0,001	714	0,035	0,094	0,001
675	0,023	0,038	0,001	695	0,035	0,075	0,000	715	0,035	0,094	0,001
676	0,035	0,056	0,000	696	0,035	0,075	0,000	716	0,035	0,094	0,000
677	0,035	0,056	0,000	697	0,035	0,075	0,003	717	0,035	0,094	0,000
678	0,023	0,056	0,000	698	0,023	0,094	0,000	718	0,035	0,113	0,000
679	0,035	0,056	0,000	699	0,035	0,094	0,002	719	0,023	0,075	0,000
680	0,035	0,056	0,000	700	0,035	0,075	0,002	720	0,023	0,094	0,000

Table C.3.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
721	0,047	0,094	0,000	731	0,023	0,075	0,001	741	0,023	0,075	0,000
722	0,035	0,094	0,000	732	0,023	0,094	0,002	742	0,023	0,094	0,000
723	0,047	0,094	0,000	733	0,035	0,094	0,001	743	0,035	0,113	0,000
724	0,035	0,094	0,000	734	0,023	0,075	0,002	744	0,035	0,094	0,000
725	0,023	0,075	0,000	735	0,035	0,094	0,002	745	0,023	0,094	0,000
726	0,035	0,075	0,000	736	0,012	0,094	0,001	746	0,035	0,075	0,000
727	0,023	0,094	0,000	737	0,035	0,094	0,001	747	0,035	0,094	0,000
728	0,035	0,094	0,000	738	0,023	0,094	0,000	748	0,047	0,094	0,000
729	0,023	0,094	0,000	739	0,035	0,094	0,000	749	0,023	0,075	0,000
730	0,023	0,094	0,001	740	0,035	0,094	0,000	750	0,035	0,094	0,000

C.4 Reference set of data No. 4

T a b l e C.4.1 — Basic parameters for reference set of data No. 4

Accident type	Side collision of low severity
ASI_{15} index (as per GOST R 54620)	less than 1.8
Direction details (coordinate system in accordance with [3])	Acceleration backwards (deceleration) — "+X" axis Acceleration forwards — "-X" axis Acceleration to right — "+Y" axis Acceleration to left — "-Y" axis Acceleration upwards — "+Z" axis Acceleration downwards — "-Z" axis
Acceleration profile recording interval, s	7,5
Number of measurements	750
Acceleration profile units	*g* (gravity acceleration)
Sample rate, Hz	100

Table C.4.2 — Acceleration profile for reference set of data No. 4 Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
1	–0,006	0,082	0,000	21	–0,006	0,084	0,000	41	–0,006	0,082	0,000
2	–0,006	0,081	0,000	22	–0,006	0,080	0,000	42	–0,006	0,090	0,000
3	–0,006	0,088	0,000	23	–0,006	0,091	0,000	43	–0,006	0,089	0,000
4	–0,006	0,088	0,000	24	–0,006	0,091	0,000	44	–0,006	0,080	0,000
5	–0,006	0,083	0,000	25	–0,006	0,083	0,000	45	–0,006	0,090	0,000
6	–0,006	0,088	0,000	26	–0,006	0,091	0,000	46	–0,006	0,088	0,000
7	–0,006	0,089	0,000	27	–0,006	0,091	0,000	47	–0,006	0,089	0,000
8	–0,006	0,080	0,000	28	–0,006	0,082	0,000	48	–0,006	0,084	0,000
9	–0,006	0,088	0,000	29	–0,006	0,088	0,000	49	–0,006	0,084	0,000
10	–0,006	0,090	0,000	30	–0,006	0,089	0,000	50	–0,006	0,083	0,000
11	–0,006	0,083	0,000	31	–0,006	0,091	0,000	51	–0,006	0,090	0,000
12	–0,006	0,084	0,000	32	–0,006	0,091	0,000	52	–0,006	0,088	0,000
13	–0,006	0,088	0,000	33	–0,006	0,090	0,000	53	–0,006	0,084	0,000
14	–0,006	0,091	0,000	34	–0,006	0,084	0,000	54	–0,006	0,082	0,000
15	–0,006	0,091	0,000	35	–0,006	0,082	0,000	55	–0,006	0,091	0,000
16	–0,006	0,091	0,000	36	–0,006	0,091	0,000	56	–0,006	0,083	0,000
17	–0,006	0,084	0,000	37	–0,006	0,091	0,000	57	–0,006	0,081	0,000
18	–0,006	0,084	0,000	38	–0,006	0,083	0,000	58	–0,006	0,091	0,000
19	–0,006	0,088	0,000	39	–0,006	0,091	0,000	59	–0,006	0,089	0,000
20	–0,006	0,080	0,000	40	–0,006	0,082	0,000	60	–0,006	0,082	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
61	–0,006	0,091	0,000	81	–0,006	0,088	0,000	101	–0,006	0,090	0,000
62	–0,006	0,090	0,000	82	–0,006	0,091	0,000	102	–0,006	0,082	0,000
63	–0,006	0,080	0,000	83	–0,006	0,083	0,000	103	–0,006	0,090	0,000
64	–0,006	0,083	0,000	84	–0,006	0,090	0,000	104	–0,006	0,091	0,000
65	–0,006	0,088	0,000	85	–0,006	0,084	0,000	105	–0,006	0,091	0,000
66	–0,006	0,081	0,000	86	–0,006	0,084	0,000	106	–0,006	0,091	0,000
67	–0,006	0,089	0,000	87	–0,006	0,091	0,000	107	–0,006	0,084	0,000
68	–0,006	0,091	0,000	88	–0,006	0,080	0,000	108	–0,006	0,084	0,000
69	–0,006	0,080	0,000	89	–0,006	0,082	0,000	109	–0,006	0,084	0,000
70	–0,006	0,083	0,000	90	–0,006	0,084	0,000	110	–0,006	0,088	0,000
71	–0,006	0,091	0,000	91	–0,006	0,089	0,000	111	–0,006	0,089	0,000
72	–0,006	0,083	0,000	92	–0,006	0,084	0,000	112	–0,006	0,091	0,000
73	–0,006	0,090	0,000	93	–0,006	0,090	0,000	113	–0,006	0,088	0,000
74	–0,006	0,090	0,000	94	–0,006	0,090	0,000	114	–0,006	0,088	0,000
75	–0,006	0,088	0,000	95	–0,006	0,082	0,000	115	–0,006	0,084	0,000
76	–0,006	0,082	0,000	96	–0,006	0,083	0,000	116	–0,006	0,091	0,000
77	–0,006	0,090	0,000	97	–0,006	0,091	0,000	117	–0,006	0,084	0,000
78	–0,006	0,084	0,000	98	–0,006	0,091	0,000	118	–0,006	0,090	0,000
79	–0,006	0,081	0,000	99	–0,006	0,084	0,000	119	–0,006	0,089	0,000
80	–0,006	0,090	0,000	100	–0,006	0,080	0,000	120	–0,006	0,089	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
121	–0,006	0,091	0,000	141	–0,006	0,089	0,000	161	–0,006	0,091	0,000
122	–0,006	0,090	0,000	142	–0,006	0,089	0,000	162	–0,006	0,091	0,000
123	–0,006	0,091	0,000	143	–0,006	0,090	0,000	163	–0,006	0,089	0,000
124	–0,006	0,082	0,000	144	–0,006	0,091	0,000	164	–0,006	0,091	0,000
125	–0,006	0,084	0,000	145	–0,006	0,091	0,000	165	–0,006	0,090	0,000
126	–0,006	0,089	0,000	146	–0,006	0,084	0,000	166	–0,006	0,091	0,000
127	–0,006	0,083	0,000	147	–0,006	0,081	0,000	167	–0,006	0,088	0,000
128	–0,006	0,088	0,000	148	–0,006	0,088	0,000	168	–0,006	0,088	0,000
129	–0,006	0,089	0,000	149	–0,006	0,091	0,000	169	–0,006	0,091	0,000
130	–0,006	0,082	0,000	150	–0,006	0,091	0,000	170	–0,006	0,082	0,000
131	–0,006	0,091	0,000	151	–0,006	0,083	0,000	171	–0,006	0,089	0,000
132	–0,006	0,090	0,000	152	–0,006	0,082	0,000	172	–0,006	0,091	0,000
133	–0,006	0,082	0,000	153	–0,006	0,081	0,000	173	–0,006	0,083	0,000
134	–0,006	0,091	0,000	154	–0,006	0,089	0,000	174	–0,006	0,088	0,000
135	–0,006	0,091	0,000	155	–0,006	0,090	0,000	175	–0,006	0,090	0,000
136	–0,006	0,091	0,000	156	–0,006	0,084	0,000	176	–0,006	0,091	0,000
137	–0,006	0,083	0,000	157	–0,006	0,091	0,000	177	–0,006	0,080	0,000
138	–0,006	0,089	0,000	158	–0,006	0,090	0,000	178	–0,006	0,083	0,000
139	–0,006	0,091	0,000	159	–0,006	0,080	0,000	179	–0,006	0,091	0,000
140	–0,006	0,091	0,000	160	–0,006	0,081	0,000	180	–0,006	0,091	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
181	–0,006	0,091	0,000	201	–0,006	0,080	0,000	221	–0,006	0,089	0,000
182	–0,006	0,081	0,000	202	–0,006	0,091	0,000	222	–0,006	0,084	0,000
183	–0,006	0,090	0,000	203	–0,006	0,090	0,000	223	–0,006	0,088	0,000
184	–0,006	0,091	0,000	204	–0,006	0,083	0,000	224	–0,006	0,082	0,000
185	–0,006	0,081	0,000	205	–0,006	0,081	0,000	225	–0,006	0,082	0,000
186	–0,006	0,082	0,000	206	–0,006	0,088	0,000	226	–0,006	0,083	0,000
187	–0,006	0,090	0,000	207	–0,006	0,082	0,000	227	–0,006	0,080	0,000
188	–0,006	0,091	0,000	208	–0,006	0,080	0,000	228	–0,006	0,084	0,000
189	–0,006	0,089	0,000	209	–0,006	0,091	0,000	229	–0,006	0,091	0,000
190	–0,006	0,091	0,000	210	–0,006	0,082	0,000	230	–0,006	0,088	0,000
191	–0,006	0,090	0,000	211	–0,006	0,081	0,000	231	–0,006	0,080	0,000
192	–0,006	0,088	0,000	212	–0,006	0,091	0,000	232	–0,006	0,082	0,000
193	–0,006	0,090	0,000	213	–0,006	0,090	0,000	233	–0,006	0,083	0,000
194	–0,006	0,089	0,000	214	–0,006	0,081	0,000	234	–0,006	0,084	0,000
195	–0,006	0,080	0,000	215	–0,006	0,091	0,000	235	–0,006	0,090	0,000
196	–0,006	0,089	0,000	216	–0,006	0,089	0,000	236	–0,006	0,080	0,000
197	–0,006	0,091	0,000	217	–0,006	0,089	0,000	237	–0,006	0,089	0,000
198	–0,006	0,080	0,000	218	–0,006	0,091	0,000	238	–0,006	0,090	0,000
199	–0,006	0,091	0,000	219	–0,006	0,088	0,000	239	–0,006	0,089	0,000
200	–0,006	0,091	0,000	220	–0,006	0,082	0,000	240	–0,006	0,083	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
241	–0,006	0,082	0,000	261	–0,006	0,089	0,000	281	–0,006	0,089	0,000
242	–0,006	0,082	0,000	262	–0,006	0,081	0,000	282	–0,006	0,082	0,000
243	–0,006	0,089	0,000	263	–0,006	0,081	0,000	283	–0,006	0,090	0,000
244	–0,006	0,090	0,000	264	–0,006	0,088	0,000	284	–0,006	0,091	0,000
245	–0,006	0,089	0,000	265	–0,006	0,083	0,000	285	–0,006	0,089	0,000
246	–0,006	0,083	0,000	266	–0,006	0,080	0,000	286	–0,006	0,091	0,000
247	–0,006	0,081	0,000	267	–0,006	0,088	0,000	287	–0,006	0,082	0,000
248	–0,006	0,089	0,000	268	–0,006	0,081	0,000	288	–0,006	0,090	0,000
249	–0,006	0,089	0,000	269	–0,006	0,090	0,000	289	–0,006	0,082	0,000
250	–0,006	0,083	0,000	270	–0,006	0,088	0,000	290	–0,006	0,091	0,000
251	–0,006	0,088	0,000	271	–0,006	0,091	0,000	291	–0,006	0,091	0,000
252	–0,006	0,089	0,000	272	–0,006	0,082	0,000	292	–0,006	0,084	0,000
253	–0,006	0,081	0,000	273	–0,006	0,091	0,000	293	–0,006	0,088	0,000
254	–0,006	0,091	0,000	274	–0,006	0,090	0,000	294	–0,006	0,090	0,000
255	–0,006	0,089	0,000	275	–0,006	0,080	0,000	295	–0,006	0,084	0,000
256	–0,006	0,083	0,000	276	–0,006	0,091	0,000	296	–0,006	0,080	0,000
257	–0,006	0,089	0,000	277	–0,006	0,091	0,000	297	–0,006	0,091	0,000
258	–0,006	0,084	0,000	278	–0,006	0,080	0,000	298	–0,006	0,082	0,000
259	–0,006	0,082	0,000	279	–0,006	0,082	0,000	299	–0,006	0,084	0,000
260	–0,006	0,089	0,000	280	–0,006	0,091	0,000	300	–0,006	0,090	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
301	–0,006	0,080	0,000	321	–0,006	0,080	0,000	341	–0,006	0,091	0,000
302	–0,006	0,084	0,000	322	–0,006	0,091	0,000	342	–0,006	0,080	0,000
303	–0,006	0,081	0,000	323	–0,006	0,089	0,000	343	–0,006	0,084	0,000
304	–0,006	0,082	0,000	324	–0,006	0,080	0,000	344	–0,006	0,082	0,000
305	–0,006	0,082	0,000	325	–0,006	0,089	0,000	345	–0,006	0,091	0,000
306	–0,006	0,089	0,000	326	–0,006	0,081	0,000	346	–0,006	0,083	0,000
307	0,006	0,090	0,000	327	–0,006	0,089	0,000	347	–0,006	0,084	0,000
308	–0,006	0,091	0,000	328	–0,006	0,084	0,000	348	–0,006	0,088	0,000
309	–0,006	0,089	0,000	329	–0,006	0,080	0,000	349	–0,006	0,084	0,000
310	–0,006	0,080	0,000	330	–0,006	0,091	0,000	350	–0,006	0,091	0,000
311	–0,006	0,083	0,000	331	–0,006	0,091	0,000	351	–0,006	0,084	0,000
312	–0,006	0,080	0,000	332	–0,006	0,090	0,000	352	–0,006	0,091	0,000
313	–0,006	0,088	0,000	333	–0,006	0,080	0,000	353	–0,006	0,081	0,000
314	–0,006	0,083	0,000	334	–0,006	0,091	0,000	354	–0,006	0,080	0,000
315	–0,006	0,083	0,000	335	–0,006	0,084	0,000	355	–0,006	0,080	0,000
316	–0,006	0,090	0,000	336	–0,006	0,090	0,000	356	–0,006	0,084	0,000
317	–0,006	0,091	0,000	337	–0,006	0,080	0,000	357	0,024	0,107	0,000
318	–0,006	0,080	0,000	338	–0,006	0,083	0,000	358	0,331	–10,434	0,000
319	–0,006	0,091	0,000	339	–0,006	0,089	0,000	359	–0,298	–12,661	0,000
320	–0,006	0,091	0,000	340	–0,006	0,081	0,000	360	1,596	–2,232	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
361	2,243	3,656	0,097	381	–0,138	1,024	0,000	401	–0,114	0,376	0,000
362	1,729	–2,510	2,408	382	–0,159	0,744	0,000	402	–0,190	0,579	0,033
363	2,228	6,525	0,303	383	–0,160	1,102	0,000	403	–0,184	0,682	0,062
364	1,297	–1,199	3,765	384	–0,182	0,623	0,000	404	–0,182	0,667	0,058
365	0,621	–1,701	2,957	385	–0,321	0,676	0,000	405	–0,333	0,518	0,065
366	–0,572	–0,438	3,857	386	–0,286	0,753	0,000	406	–0,432	0,536	0,116
367	–0,298	–1,299	2,256	387	–0,267	0,949	0,000	407	–0,336	0,567	0,143
368	–0,531	–0,152	1,905	388	–0,208	1,014	0,000	408	–0,277	–0,039	0,048
369	–0,444	–0,521	0,429	389	–0,190	0,931	0,000	409	–0,297	0,143	0,059
370	–0,064	–0,408	0,459	390	–0,260	1,073	0,000	410	–0,257	0,091	0,064
371	–0,045	–0,616	0,096	391	–0,202	0,775	0,000	411	–0,257	–0,031	0,016
372	–0,352	0,968	0,213	392	–0,227	0,806	0,000	412	–0,312	0,000	0,036
373	0,054	0,084	0,034	393	–0,267	0,729	0,000	413	–0,362	0,123	0,020
374	–0,312	0,075	0,000	394	–0,309	0,508	0,000	414	–0,344	0,166	0,040
375	–0,519	0,857	0,000	395	–0,324	0,553	0,000	415	–0,352	0,146	0,054
376	–0,495	0,662	0,000	396	–0,267	0,469	0,000	416	–0,525	0,496	0,034
377	–0,286	1,283	0,000	397	–0,210	0,368	0,000	417	–0,772	0,229	0,005
378	–0,217	1,329	0,007	398	–0,228	0,414	0,000	418	–2,007	1,358	0,000
379	–0,112	0,842	0,000	399	–0,166	0,345	0,000	419	–4,888	2,736	0,000
380	–0,139	1,221	0,000	400	–0,178	0,413	0,000	420	–4,762	4,786	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
421	–2,685	2,507	0,125	441	0,569	0,123	0,000	461	–0,142	0,300	0,068
422	–3,576	2,600	0,000	442	0,508	0,230	0,007	462	–0,300	0,208	0,057
423	–3,737	4,076	0,000	443	0,463	0,143	0,000	463	–0,315	0,111	0,045
424	–2,422	0,376	0,000	444	0,397	0,268	0,000	464	–0,376	0,162	0,019
425	–1,632	–1,158	0,000	445	0,235	0,000	0,000	465	–0,268	0,215	0,011
426	–1,336	–0,347	0,000	446	0,319	–0,015	0,000	466	–0,206	0,223	0,005
427	–0,091	–0,785	0,000	447	0,201	0,176	0,000	467	–0,154	0,355	0,007
428	–0,169	–0,815	0,011	448	0,209	0,174	0,000	468	–0,096	0,330	0,010
429	–0,157	0,148	0,350	449	0,235	0,159	0,000	469	–0,070	0,323	0,014
430	0,060	–0,508	0,061	450	0,186	0,252	0,000	470	–0,058	0,257	0,006
431	–0,122	0,677	0,019	451	0,132	0,376	0,000	471	–0,034	0,223	0,004
432	0,012	0,368	0,004	452	0,087	0,364	0,000	472	–0,051	0,232	0,001
433	–0,068	–0,144	0,002	453	0,041	0,315	0,000	473	–0,029	0,126	0,000
434	0,006	0,943	0,277	454	–0,033	0,513	0,000	474	0,036	–0,023	0,000
435	0,174	0,255	0,191	455	–0,057	0,571	0,001	475	0,018	0,111	0,000
436	0,122	0,662	0,244	456	–0,108	0,524	0,024	476	0,060	0,112	0,000
437	0,275	0,401	0,171	457	–0,114	0,526	0,015	477	0,046	0,190	0,002
438	0,335	0,028	0,000	458	–0,058	0,454	0,003	478	0,086	0,224	0,000
439	0,325	0,206	0,000	459	–0,011	0,278	0,022	479	0,080	0,276	0,000
440	0,434	–0,172	0,000	460	–0,117	0,252	0,041	480	0,084	0,325	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
481	0,070	0,301	0,000	501	0,064	0,210	0,000	521	0,006	0,228	0,000
482	0,123	0,200	0,000	502	0,066	0,204	0,000	522	0,000	0,229	0,000
483	0,112	0,208	0,000	503	0,041	0,232	0,000	523	0,000	0,236	0,000
484	0,098	0,230	0,000	504	0,024	0,189	0,000	524	0,000	0,236	0,000
485	0,108	0,185	0,000	505	0,012	0,171	0,001	525	0,006	0,232	0,000
486	0,124	0,220	0,000	506	–0,028	0,250	0,006	526	0,018	0,230	0,000
487	0,108	0,290	0,000	507	–0,033	0,218	0,011	527	0,012	0,245	0,000
488	0,118	0,252	0,000	508	–0,046	0,210	0,013	528	0,018	0,245	0,000
489	0,070	0,334	0,000	509	–0,047	0,225	0,012	529	0,018	0,260	0,000
490	0,040	0,383	0,000	510	–0,039	0,222	0,013	530	0,012	0,271	0,001
491	0,029	0,372	0,000	511	–0,028	0,212	0,007	531	0,006	0,276	0,001
492	–0,016	0,395	0,000	512	–0,016	0,206	0,002	532	0,000	0,271	0,001
493	–0,028	0,364	0,000	513	–0,011	0,194	0,001	533	–0,006	0,268	0,002
494	–0,028	0,364	0,000	514	0,006	0,181	0,000	534	–0,016	0,265	0,002
495	–0,027	0,273	0,000	515	0,034	0,157	0,000	535	–0,028	0,257	0,002
496	–0,006	0,239	0,000	516	0,034	0,168	0,000	536	–0,035	0,260	0,002
497	0,012	0,196	0,000	517	0,046	0,179	0,000	537	–0,040	0,242	0,001
498	0,041	0,155	0,000	518	0,047	0,163	0,000	538	–0,041	0,244	0,001
499	0,053	0,165	0,000	519	0,035	0,166	0,000	539	–0,045	0,232	0,000
500	0,066	0,171	0,000	520	0,012	0,220	0,000	540	–0,040	0,225	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
541	–0,040	0,222	0,000	561	0,030	0,237	0,000	581	–0,011	0,232	0,000
542	–0,035	0,222	0,000	562	0,024	0,245	0,000	582	–0,011	0,230	0,000
543	–0,028	0,215	0,000	563	0,018	0,239	0,000	583	–0,011	0,239	0,000
544	–0,029	0,216	0,000	564	0,006	0,252	0,000	584	–0,006	0,230	0,000
545	–0,028	0,212	0,000	565	0,006	0,242	0,000	585	–0,006	0,230	0,000
546	–0,034	0,212	0,000	566	0,000	0,239	0,000	586	–0,006	0,220	0,000
547	–0,027	0,206	0,000	567	0,000	0,232	0,000	587	0,000	0,223	0,000
548	–0,027	0,206	0,000	568	0,000	0,239	0,000	588	0,000	0,220	0,000
549	–0,027	0,202	0,000	569	0,000	0,247	0,000	589	0,000	0,220	0,000
550	–0,016	0,202	0,000	570	0,000	0,229	0,000	590	0,000	0,220	0,000
551	–0,011	0,208	0,000	571	0,000	0,247	0,000	591	–0,006	0,222	0,000
552	–0,006	0,222	0,000	572	–0,006	0,244	0,000	592	–0,006	0,222	0,000
553	–0,006	0,224	0,000	573	–0,006	0,237	0,000	593	–0,006	0,220	0,000
554	0,000	0,222	0,000	574	0,000	0,239	0,000	594	–0,006	0,232	0,000
555	0,000	0,215	0,000	575	0,000	0,247	0,000	595	–0,006	0,223	0,000
556	0,012	0,210	0,000	576	0,000	0,247	0,000	596	–0,006	0,225	0,000
557	0,018	0,220	0,000	577	0,000	0,239	0,000	597	–0,006	0,215	0,000
558	0,024	0,220	0,000	578	0,000	0,237	0,000	598	–0,006	0,224	0,000
559	0,030	0,223	0,000	579	–0,006	0,239	0,000	599	0,000	0,232	0,000
560	0,030	0,230	0,000	580	–0,006	0,236	0,000	600	0,000	0,232	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
601	0,012	0,015	0,000	621	0,047	0,015	0,000	641	0,023	0,015	0,000
602	0,012	0,015	0,000	622	0,035	0,015	0,000	642	0,035	0,015	0,000
603	0,012	0,015	0,000	623	0,023	0,015	0,000	643	0,035	0,030	0,000
604	0,012	0,015	0,001	624	0,023	0,015	0,000	644	0,035	0,030	0,000
605	0,023	0,015	0,006	625	0,023	0,015	0,000	645	0,035	0,030	0,000
606	0,023	0,015	0,011	626	0,023	0,000	0,000	646	0,047	0,015	0,000
607	0,023	0,015	0,013	627	0,023	0,015	0,000	647	0,059	0,015	0,000
608	0,023	0,030	0,012	628	0,023	0,000	0,000	648	0,035	0,015	0,000
609	0,035	0,015	0,013	629	0,023	0,015	0,001	649	0,023	0,030	0,000
610	0,035	0,030	0,007	630	0,023	0,015	0,001	650	0,047	0,015	0,000
611	0,035	0,015	0,002	631	0,012	0,015	0,001	651	0,035	0,015	0,000
612	0,035	0,030	0,001	632	0,023	0,015	0,002	652	0,023	0,030	0,000
613	0,035	0,030	0,000	633	0,023	0,000	0,002	653	0,035	0,030	0,000
614	0,047	0,030	0,000	634	0,012	0,000	0,002	654	0,035	0,015	0,000
615	0,035	0,030	0,000	635	0,012	0,015	0,002	655	0,047	0,015	0,000
616	0,035	0,030	0,000	636	0,023	0,015	0,001	656	0,035	0,015	0,000
617	0,035	0,030	0,000	637	0,023	0,015	0,001	657	0,035	0,015	0,000
618	0,047	0,015	0,000	638	0,023	0,015	0,000	658	0,023	0,030	0,000
619	0,035	0,015	0,000	639	0,035	0,015	0,000	659	0,023	0,030	0,000
620	0,035	0,030	0,000	640	0,035	0,015	0,000	660	0,023	0,015	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
661	0,035	0,015	0,000	681	0,035	0,046	0,000	701	0,023	0,076	0,000
662	0,012	0,030	0,000	682	0,035	0,046	0,000	702	0,035	0,061	0,000
663	0,023	0,015	0,000	683	0,035	0,061	0,000	703	0,023	0,076	0,001
664	0,012	0,030	0,000	684	0,035	0,061	0,000	704	0,023	0,076	0,006
665	0,012	0,015	0,000	685	0,035	0,061	0,000	705	0,035	0,061	0,011
666	0,012	0,030	0,000	686	0,035	0,046	0,000	706	0,023	0,076	0,013
667	0,023	0,015	0,000	687	0,035	0,061	0,000	707	0,035	0,076	0,012
668	0,012	0,015	0,000	688	0,035	0,061	0,000	708	0,023	0,076	0,013
669	0,023	0,030	0,000	689	0,035	0,061	0,000	709	0,047	0,076	0,007
670	0,023	0,030	0,000	690	0,035	0,061	0,000	710	0,035	0,076	0,002
671	0,023	0,030	0,000	691	0,035	0,061	0,000	711	0,035	0,076	0,001
672	0,023	0,030	0,000	692	0,023	0,061	0,000	712	0,035	0,076	0,000
673	0,023	0,030	0,000	693	0,035	0,061	0,000	713	0,035	0,076	0,000
674	0,023	0,030	0,000	694	0,023	0,061	0,000	714	0,035	0,076	0,000
675	0,023	0,030	0,000	695	0,035	0,061	0,000	715	0,035	0,076	0,000
676	0,035	0,046	0,000	696	0,035	0,061	0,000	716	0,035	0,076	0,000
677	0,035	0,046	0,000	697	0,035	0,061	0,000	717	0,035	0,076	0,000
678	0,023	0,046	0,000	698	0,023	0,076	0,000	718	0,035	0,091	0,000
679	0,035	0,046	0,000	699	0,035	0,076	0,000	719	0,023	0,061	0,000
680	0,035	0,046	0,000	700	0,035	0,061	0,000	720	0,023	0,076	0,000

Table C.4.2 (continued)

Overload (acceleration) in *g*

Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value			Sequential number of measurement	Measured acceleration value		
	a_x	a_y	a_z		a_x	a_y	a_z		a_x	a_y	a_z
721	0,047	0,076	0,000	731	0,023	0,061	0,002	741	0,023	0,061	0,000
722	0,035	0,076	0,000	732	0,023	0,076	0,002	742	0,023	0,076	0,000
723	0,047	0,076	0,000	733	0,035	0,076	0,002	743	0,035	0,091	0,000
724	0,035	0,076	0,000	734	0,023	0,061	0,002	744	0,035	0,076	0,000
725	0,023	0,061	0,000	735	0,035	0,076	0,001	745	0,023	0,076	0,000
726	0,035	0,061	0,000	736	0,012	0,076	0,001	746	0,035	0,061	0,000
727	0,023	0,076	0,000	737	0,035	0,076	0,000	747	0,035	0,076	0,000
728	0,035	0,076	0,001	738	0,023	0,076	0,000	748	0,047	0,076	0,000
729	0,023	0,076	0,001	739	0,035	0,076	0,000	749	0,023	0,061	0,000
730	0,023	0,076	0,001	740	0,035	0,076	0,000	750	0,035	0,076	0,000

N o t e : The following notation is used in "Measured acceleration value" columns:

a_x, a_y, a_z — acceleration components of a vehicle point where the acceleration sensor is secured, along the principle axes of the vehicle (x for longitudinal, y for transversal, z for vertical).

Bibliography

[1] TP TC 018/2011	Technical Regulation of the Customs Union "On Safety of Wheeled Vehicles"
[2] POTRM-016-2001 RD153-34.0-03.150-00	Inter-branch guidelines on occupational safety during operation of electrical installations
[3] UNECE Regulation No. 94-01	Uniform provisions concerning the approval of vehicles with regard to the protection of the occupants in the event of a frontal collision, including Appendices 1—3
[4] UNECE Regulation No. 95-02	Uniform provisions concerning the approval of vehicles with regard to the protection of the occupants in the event of a lateral collision, including Appendix 1
[5] UNECE Regulation No. 12-02	Uniform provisions concerning the approval of vehicles with regard to the protection of the driver against the steering mechanism in the event of impact
[6] ISO 6487:2012	Road vehicles — Measurement techniques in impact tests — Instrumentation

UDC 621.396.931:006.354 OKS 35.240.60, 33.070.40

Keywords: emergency, in-vehicle emergency call system, road traffic accident, test methods, accident event, ERA-GLONASS road accident emergency response system, vehicle, reference set of data

Editor *E.S. Kotljarova*
Technical Editor *V.N. Prusakova*
Proof-Reader *M.V. Buchnaja*
Computer Imposition *A.V. Bestuzhevoy*