

Proposal for amendments to GRSG/2019/21

The text reproduced below has been prepared by TF EMC with the aim to update Annex 7 for Electromagnetic compatibility to be consistent with the state of the art for EMC (ECE R10 and/or international standards). The modifications are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Annex 7, Note, to be deleted:

~~“Note: To test the electromagnetic compatibility, either paragraph 1. or paragraph 2. shall be used, depending on the test facilities.”~~

Annex 7, clause 1 Title, to be deleted

~~“1. ISO Method”~~

Annex 7, Immunity against disturbances conducted along supply lines, amend to read:

~~“Immunity against disturbances conducted along supply lines~~

1.1. Immunity against disturbances conducted along supply lines

Tests shall be performed according to the technical prescriptions and transitional provisions of Regulation No. 10.06 series of amendments and according to the test methods described in Annex 10 for an Electrical/Electronic Sub-Assembly (ESA).

The immobilizer shall be tested in unset state and in set state

~~Apply the test pulses 1, 2a/2b, 3a, 3b, 4 and 5a/5b according to the International Standard ISO 7637 2:2004 to the supply lines as well as to other connections of immobilizer which may be operationally connected to supply lines.~~

~~Concerning pulse 5, pulse 5b shall be applied on vehicles which include an alternator with internal limitation diode and pulse 5a shall be applied for others cases.~~

~~Concerning the pulse 2, pulse 2a shall always be applied and pulse 2b could be performed with the agreement between the vehicle manufacturer and the technical approval services.~~

~~With the agreement of the Technical Service, Test pulse 5a/5b need not be applied in the following circumstances:~~

~~(a) Type Approval of a immobilizer which is to be type approved as a separate technical unit and intended for the fitment to vehicles without any alternators~~

~~In this case, the manufacturer of the immobilizer shall:~~

- ~~i. Specify in item 4.5. of the information document (Annex 1a), that the requirement of this paragraph was not applied to the immobilizer (in accordance with paragraph 5. of this Regulation); and~~

- ii. ~~Specify in item 4.1. of the information document, the list of vehicles to which the immobilizer is intended to be fitted and the relevant installation conditions in item 4.2.~~

~~(b) Type approval of a vehicle in respect of an immobilizer intended for fitment to vehicles without alternators~~

~~In this case, the manufacturer shall specify in item 3.1.3.1.1. of the information document (Annex 1a), that the requirement of this paragraph does not apply to the immobilizer due to the nature of installation conditions.~~

~~(c) Type approval of a vehicle in respect of the installation of a immobilizer which is type approved as a separate technical unit and intended for the fitment to vehicles without any alternators~~

~~In this case, the vehicle manufacturer shall specify in item 3.1.3.1.1. of the information document (Annex 1a, Part 1), that the requirement of this paragraph does not apply to the installation of the immobilizer where the relevant installation conditions are met.~~

~~This requirement does not apply in cases where the information required in item 3.1.3.1.1. of Annex 1 has already been submitted for the approval of the separate technical unit.~~

~~Immobilizer in unset state and set state~~

~~The test pulses 1 through 5 shall be applied. The required functional status for all applied test pulses are given in table 1.~~

Table 1—Severity/functional status (for supply lines)

| Test pulse number | Test level | Functional status |
|-------------------|------------|-------------------|
| 1 | III | C |
| 2a | III | B |
| 2b | III | C |
| 3a | III | A |
| 3b | III | A |
| 4 | III | B |
| 5a/5b | III | A |

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Annex 7, Immunity against disturbances coupled on signal lines, to be deleted

~~“Immunity against disturbance coupled on signal lines~~

~~Leads which are not connected to supply lines (e.g. special signal lines) shall be tested in accordance with the International Standard ISO7637 3:1995 (and Corr.1). The required functional status for all applied test pulses are given in table 2.~~

Table 2—Test level / functional status (for signal lines)

| Test pulse number | Test level | Functional status |
|-------------------|------------|-------------------|
| 3a | III | C |
| 3b | III | A |

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Annex 7, *Immunity against radiated high frequency disturbances*, amend to read:

~~“Immunity against radiated high frequency disturbances~~

1.2. Immunity against radiated high frequency disturbances

Testing of the immunity of a immobilizer in a vehicle may be performed according to the technical prescriptions and transitional provisions of Regulation No. 10, 046 series of amendments and test methods described in Annex 6 for the vehicles ~~and~~ or Annex 9 for a ~~separate technical unit~~ **an Electrical/Electronic Sub-Assembly (ESA)**.

The immobilizer shall be tested with operating conditions and failure criteria as defined in table 1

| Test type | Immobilizer operating conditions | Failure criteria |
|--|---|--|
| Vehicle test | Immobilizer in unset state Key ON or Vehicle at 50 km/h ⁽¹⁾ | Unexpected activation of the immobilizer |
| | Immobilizer in set state Key OFF | Unexpected deactivation of the immobilizer |
| | Immobilizer in set state Vehicle in charging mode (if applicable) | Unexpected deactivation of the immobilizer |
| ESA Test | Immobilizer in unset state | Unexpected activation of the immobilizer |
| | Immobilizer in set state | Unexpected deactivation of the immobilizer |
| (1) : this test can be covered by the ECE R10 50 km/h mode | | |

Table 1 – Operating conditions and failure criteria for immobilizer”

Annex 7, *Electrical disturbance from electrostatic discharges*, amend to read:

~~“Electrical disturbance from electrostatic discharges~~

1.3. Electrical disturbance from electrostatic discharges

Immunity against electrical disturbances shall be tested in accordance with ~~Technical Report ISO/TR 10605-1993-2008~~ **+ corrigendum:2010 + AMD1:2014** using the test severity levels from table 2.

ESD tests shall be performed either at vehicle level or at Electrical/Electronic Sub-Assembly (ESA) level.

| Discharge type | Discharge points | Immobilizer state | Discharge network | Test Level | Failure criteria |
|--|--|--|-------------------|------------|--|
| Air discharge | Points that can easily be accessed only from the inside of the vehicle | Immobilizer in unset state (if test performed on vehicle then vehicle shall be Key ON or Vehicle at 50 km/h or engine in idle mode) | 330 pF, 2 kΩ | ± 6 kV | Unexpected activation of the immobilizer |
| | Points that can easily be touched only from the outside of the vehicle | Immobilizer in set state (if test performed on vehicle then vehicle shall be locked and Key OFF) | 150 pF, 2 kΩ | ± 15 kV | Unexpected deactivation of the immobilizer without reactivation, within 1s, after each discharge |
| Contact discharge | Points that can easily be accessed only from the inside of the vehicle | Immobilizer in unset state (if test performed on vehicle then vehicle shall be Key ON or Vehicle at 50 km/h or engine in idle mode) | 330 pF, 2 kΩ | ± 4 kV | Unexpected activation of the immobilizer |
| | Points that can easily be touched only from the outside of the vehicle | Immobilizer in set state (if test performed on vehicle then vehicle shall be locked and Key OFF) | 150 pF, 2 kΩ | ± 8 kV | Unexpected deactivation of the immobilizer without reactivation, within 1s, after each discharge |
| Each test shall be performed with 3 discharges with a minimum of 5 s interval between each discharge | | | | | |

Table 2 – ESD Test levels

~~With the agreement of the Technical Service this requirement need not apply in the following circumstances:~~

~~(a) Type Approval of a immobilizer which is to be type approved as a separate technical unit~~

~~In this case, the manufacturer of the immobilizer shall:~~

- ~~i. Specify in item 4.5. of the information document (Annex 1a), that the requirement of this paragraph was not applied to the immobilizer (in accordance with paragraph 7. of this Regulation); and~~
- ~~ii. Specify in item 4.1. of the information document, the list of vehicles to which the immobilizer is intended to be fitted and the relevant installation conditions in item 4.2.~~

~~(b) Type approval of a vehicle in respect of an immobilizer~~

~~In this case, the manufacturer shall specify in paragraph 3.1.3.1.1. of the information document (Annex 1a), that the requirement of this paragraph does not apply to the immobilizer due to the nature of installation conditions and the vehicle manufacturer shall prove it by submitting related documents.~~

~~(c) Type approval of a vehicle in respect of the installation of an immobilizer which is type approved as a separate technical unit~~

~~In this case, the vehicle manufacturer shall specify in item 3.1.3.1.1. of the information document (Annex 1a), that the requirement of this paragraph does not apply to the installation of the immobilizer where the relevant installation conditions are met.~~

~~This requirement does not apply in cases where the information required in item 3.1.3.1.1. of Annex 1a has already been submitted for the approval of the separate technical unit.”~~

Annex 7, Radiated emissions, amend to read:

~~“Radiated emissions~~

1.4. Radiated emissions

Tests shall be performed according to the technical prescriptions and transitional provisions of Regulation No. 10, 04~~6~~ series of amendments ~~prescriptions~~ and according to the test methods described in Annexes 4 and 5 for vehicles or Annexes 7 and 8, for ~~a separate technical unit~~ **an Electrical/Electronic Sub-Assembly (ESA).**

The immobilizer shall be in set state.”

Annex 6, IEC METHOD, to be deleted:

~~“2. IEC METHOD~~

~~Electromagnetic field~~

~~The immobilizer shall undergo the basic test. It shall be subjected to the electromagnetic field test described in IEC Publication 839 1 3 1998 test A 13 with a frequency range from 20 to 1000 MHz, and for a field strength level of 30 V/m.~~

~~In addition, the immobilizer shall be subjected to the electrical transient conducted and coupled tests described in the International Standard ISO 7637 Parts 1:1990, 2:1990 and 3:1995, as appropriate.~~

~~Electrical disturbance from electrostatic discharges~~

~~The immobilizer shall undergo the basic test. It shall be subjected to testing for immunity against electrostatic discharge as described in either EN 61000 4 2, or ISO/TR 10605 1993, at the manufacturer's choice.~~

~~Radiated emissions~~

~~The immobilizer shall be subjected to testing for the suppression of radio frequency interference according to the technical prescriptions and transitional provisions of Regulation No. 10, 04 series of amendments and according to tests method described in Annexes 4 and 5 for vehicles and Annexes 7 and 8 for a separate technical unit.”~~

II. Justification

1. Document simplification by referring to the latest ECE R10.06 which represents state of the art.
 2. The test of immunity against disturbance coupled on signal lines is not representative of a real misuse-case (in terms of coupling device used in vehicle and/or discrimination of signal lines in whole vehicle harnesses).
 3. For immunity to external sources, addition of a table with precision on operating conditions and failure criteria (both for vehicle and bench test).
 4. For ESD test, reference to updated version of ISO 10605.
 5. For ESD tests, precision of test severity levels to be used and of operating conditions and failure criterias.
 6. For radiated emission, precision on operating conditions.
 7. Deletion of the alternative « Method IEC » due to the fact that test described in this part were either a duplication of those in “Method ISO” or reference to test which are no more state of the art.
 8. The other corrections are purely editorial.
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