

Proposal for amendments to GRSG/2019/20

The text reproduced below has been prepared by TF EMC with the aim to update Annex 5 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 5, 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 5, paragraph 1 Title, to be deleted:

~~“1. ISO Method”~~

Annex 5, paragraph 1.1., amend to read:

“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 device against unauthorized use 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 device 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.”~~

Annex 5, paragraph 1.2., to be deleted:

~~“1.2. Device in unset state and set state~~

~~The test pulses 1 through 5, shall be applied with a degree of severity III. The required functional status for all applied test pulses are given in Table 1.~~

~~Table 1~~

~~**Severity/functional status (for supply lines)**~~

<i>Test</i>	<i>Test</i>	<i>Functional</i>

1	I	C
2	I	B
2	I	C
3	I	A
3	I	A
4	I	B
5	I	A

”

Annex 5, paragraph 1.3., to be deleted:

“1.3. 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)

<i>Test pulse number</i>	<i>Test level</i>	<i>Functional status</i>
3a	III	C
3b	III	A

”

Annex 5, paragraph 1.4., amend to read:

“1.4.2. Immunity against radiated high frequency disturbances

Testing of the immunity of a device **against unauthorized use** in a vehicle may be performed according to the technical prescriptions and transitional provisions of UN 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 device against unauthorized use shall be tested with operating conditions and failure criteria as defined in table 1

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

Table 1 – Operating conditions and failure criteria for device against unauthorized use”

Annex 5, paragraph 1.5., amend to read:

“1.5.3. 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	Device against unauthorized use state	Discharge network	Test Level	Failure criteria
Air discharge	Points that can easily be accessed only from the inside of the vehicle	Device against unauthorized use 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 device against unauthorized use
	Points that can easily be touched only from the outside of the vehicle	Device against unauthorized use 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 device against unauthorized use without reactivation,

					within 1s, after each discharge
Contact discharge	Points that can easily be accessed only from the inside of the vehicle	Device against unauthorized use 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 device against unauthorized use
	Points that can easily be touched only from the outside of the vehicle	Device against unauthorized use 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 device against unauthorized use 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”

Annex 5, paragraph 1.6., amend to read:

“1.6.4. Radiated emissions

Tests shall be performed according to the technical prescriptions and transitional provisions of UN Regulation 10, 046 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 device against unauthorized use shall be in set state.”

Annex 5, paragraph 2., to be deleted:

~~“2. IEC Method~~

~~2.1. Electromagnetic field~~

~~The device 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 device 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.~~

~~2.2. Electrical disturbance from electrostatic discharges~~

~~The device 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.~~

~~2.3. Radiated emissions~~

~~The device shall be subjected to testing for the suppression of radio frequency interference according to the technical prescriptions and transitional provisions of UN 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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