

Proposal for amendments to GRSG/2019/22

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, paragraph 1 Title, to be deleted:

~~“1. ISO Method”~~

Annex 7, 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 VAS/AS shall be tested in unset state and in set state

~~Apply 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 VAS/AS 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 VAS 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 VAS shall:~~

~~(i) Specify in item 4.5. of the information document (Annex 1), that the requirement of this paragraph was not applied to the VAS (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 VAS is intended to be fitted and the relevant installation conditions in item 4.2.~~

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

~~In this case, the manufacturer shall specify in item 4.5. of the information document (Annex 1), that the requirement of this paragraph does not apply to the AS due to the nature of installation conditions.~~

~~(c) Type approval of a vehicle in respect of the installation of a VAS 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 4.5. of the information document (Annex 1), that the requirement of this paragraph does not apply to the installation of the VAS where the relevant installation conditions are met.~~

~~This requirement does not apply in cases where the information required in item 2.1. of Annex 1 has already been submitted for the approval of the separate technical unit.~~

~~VAS/AS 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)**~~

<i>Test pulse number</i>	<i>Test level</i>	<i>Functional status</i>
1	III	C
2a	III	B
2b	III	C
3a	III	A
3b	III	A
4	III	B
5a/5b	III	A

”

Annex 7, 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	€
3b	III	A

”

Annex 7, paragraph 1.4., amend to read:

“1.4.2. Immunity against radiated high frequency disturbances

Testing of the immunity of a VAS/AS 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 7 for the vehicles ~~and or~~ Annex 9 for ~~a separate technical unit~~ **an Electrical/Electronic Sub-Assembly (ESA)**.

The VAS/AS shall be tested with operating conditions and failure criteria as defined in table 1

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

Table 1 – Operating conditions and failure criteria for VAS/AS”

Annex 7, 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~~ **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	VAS/AS state	Discharge network	Test Level	Failure criteria
Air discharge	Points that can easily be accessed only from the inside of the vehicle	VAS/AS 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 VAS/AS
	Points that can easily be touched only from the outside of the vehicle	VAS/AS 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 VAS/AS without reactivation, within 1s, after each discharge
Contact discharge	Points that can easily be accessed only from the inside of the vehicle	VAS/AS 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 VAS/AS
	Points that can easily be touched only from the outside of the vehicle	VAS/AS 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 VAS/AS 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 VAS which is to be type approved as a separate technical unit~~

~~— In this case, the manufacturer of the VAS shall:~~

~~(i) Specify in item 4.5. of the information document (Annex 1), that the requirement of this paragraph was not applied to the VAS (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 VAS is intended to be fitted and the relevant installation conditions in item 4.2.~~

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

~~— In this case, the manufacturer shall specify in paragraph 4.5. of the information document (Annex 1), that the requirement of this paragraph does not apply to the AS due to the nature of installation conditions and the vehicle manufacturer shall prove it by submitting related documents.~~

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

~~— In this case, the vehicle manufacturer shall specify in item 4.5. of the information document (Annex 1), that the requirement of this paragraph does not apply to the installation of the VAS where the relevant installation conditions are met.~~

~~— This requirement does not apply in cases where the information required in item 2.1. of Annex 1 has already been submitted for the approval of the separate technical unit.”~~

Annex 7, 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 No. 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 VAS/AS shall be in set state.”

Annex 7, Method IEC, to be deleted

~~“2. Method IEC~~

~~2.1. Electromagnetic field~~

~~The VAS/AS 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 VAS/AS 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 VAS/AS 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 VAS/AS 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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