

Template for comments and secretariat observations:

Date: 2016_03_08	Document: ISO/FDIS 7637- 3	Project:
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ISO/TC22/SC32/WG3 N 2572

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MB	Clause No /Subclause No /Annex	Paragraph /Figure /Table / Note	Type of comment	Comment (justification for change) by MB	Proposed change by the MB	Secretariat observation on each comment submitted.
US 1	4.1	3rd para	ed	Text states: Some transient pulses tests."	Change to: " Some transient pulse tests ..."	Accepted
US 2	4.1	2nd to last bullet point	ed	"the leads to be included in the inductive clamp, if used; and"	Drop the term "and" to simplify the statement. Results in: "the leads to be included in the inductive clamp, if used;" This conforms to word usage in other bullet points.	Not accepted
US 3	4.1	1st sentence after bullet points.	ed	Inconsistent term usage: "Suggested values for the evaluation ... "	Change text to: "Suggested transient pulse levels for the evaluation ... "	Accepted with additional word (severity)
Fr 1	4.4	6 th paragraph	ed	The part of load, sensor which should be connected to the ground plane is not clear (ground line, metallic case). The present wording may lead to confusion with second paragraph of 4.5.4 which also gives the requirements concerning auxiliary equipment grounding.	Replace: "Unless otherwise specified in the test plan, all loads, sensors, etc. are connected to the ground plane using the shortest possible length." By "Unless otherwise specified in the test plan, all loads, sensors, etc. grounds (lines, metallic cases) are connected to the ground plane using the shortest possible length."	Accepted
US 4	4.4	3rd paragraph	ed	Paragraph talks about placement of the DUT on an insulator above ground or directly on ground and also attempts to talk about local DUT grounding. The paragraph is confusing. Also, the same information is repeated in sections 4.5.4, 4.4, and 4.74 for the three test methods. Each of those are similar information but wording is different in each one	Clear and concise DUT setup information should only appear in section 4.4 since it is common for all test methods. All redundant statements should be removed. Two changes are proposed. 1) Replace the text in 4.4, 3 rd paragraph with a modified text from section 4.6.4 (para 4 & 5). Specifically: "The DUT shall be placed on a non-conductive, low relative permittivity material ($\epsilon_r \leq 1,4$), at (50 ±5) mm above the ground plane. If the DUT is locally grounded (maximum length of 200 mm), then the DUT's ground supply line shall be connected to the ground plane as defined in the test plan. The DUT has a metal case, it shall not be grounded to the ground plane unless it is intended to simulate the actual vehicle configuration." 2) Delete redundant paragraphs in sections 4.5.4 (para 8 & 9); 4.6.4 (para 4 & 5); and 4.7.4 (para 4 & 5)	Accepted with additional sentences added in 4.5.4, 4.6.4 and 4.7.4 to refer to 4.4 for general condition.
US 5	4.5.2	1 st paragraph	ed	Figure references are incorrect. Fast transients are in figures 10 and 11	Replace Figures 8 and 9 with Figures 10 and 11	Accepted

US 6	4.5.3	2 nd paragraph	ed	Use of the phrase "...50 Ω attenuator which is mounted to coupling clamp as shown in Figure 1." is not clear of intent to connect the attenuator to the CCC directly (i.e. no cables)	Propose word change to: "...50 Ω attenuator which is directly connected to the output of the CCC (no intermediate cable connections) as shown in Figure 1."	Accepted
US 7	4.5.4	1 st paragraph	ed	The text: "the test method using the CCC is shown in Figure 2" should be modified because it is talking about the setup not the overall method, which includes test procedures.	Replace text with: "The test setup using the CCC is shown in Figure 2"	Accepted
Fr2	4.5.4	2 nd paragraph	ed	ISO 7637-3 concerns coupling via lines other than supply lines and therefore DUT 12 / 24 V supply lines shall not be included in the CCC.	Replace: "The DUT 12/24 V supply lines (ground and supply) should not be included in the CCC." By : "The DUT 12/24 V supply lines (ground and supply) shall not be included in the CCC."	Not accepted, to technical
Fr3	4.5.4	8 th and 9 th paragraph	ed	These two sentences are not exactly the same than those in paragraph 4.4 (3 and 4 th paragraph) which concerns general test setup conditions conditions for DUT insulation and grounding.	Deleted the two paragraphs.	Accepted see U.S 4
US 8	4.5.4	2 nd paragraph	te	Text states that DUT supply lines (ground and supply) are not to be included in CCC. However ground or supply delivered from DUT to auxiliary equipment (sensors, actuators) is okay to do. The approach is fundamentally flawed because it assumes differences in source/load impedance. The technical rational to preclude primary power/ground to the DUT must also be applied to DUT supplied power to another load (e.g. sensor). The text essentially precludes testing two wire sensors.	Propose the following changes: 1) State that only DUT ground are not to be placed in the CCC 2) Inclusion of an artificial network on the DUT supply to improve coupling efficiency to the supply lead. This has proven to be extremely effective when testing two wire sensors. This change should be applied to all three test methods.	Not accepted
US 9	4.5.4	3 rd paragraph	ed	The text implies wires shall remain flat, but language is not strong enough	Propose change in text in paragraph from: "The lines which are included in the CCC shall be limited to the maximum number of lines which can be placed flat in a single layer in the CCC (typically 10 to 20 lines); this may require multiple tests to be performed in order to test all the DUT lines." To: "All lines which are placed in the CCC shall lie flat in single layer (typically 10 20 lines). This may require multiple tests to be performed in order to test all the DUT lines."	Accepted

US 10	4.5.4	Note at bottom of page 4	ed	Text states: "For special applications a flat harness with maximum 10-20 lines inside the CCC may be agreed upon in the test plan." It is not clear what is being stated. Does not allow use of a flat ribbon cable or flat conductor/flat cable?	Clarify meaning of note	Accepted : decision to suppress the Note
US 11	4.5.4	Figure 2	ed	Figure dimensions are incomplete (e.g. distances between DUT and CCC not shown)	Update Figure for clarity	Accepted but with 300 mm distance on top view from CCC center instead of CCC edge.
US 12	4.5.4	Paragraph 8 & 9		Information regarding DUT setup is redundant with information provided in 4.4	Delete paragraphs 8 and 9 per US4	Accepted see US 4
DE1	4.6.2	Par .2		In the following chapters the use of the 1kOhm to 50Ohm is mandatory. This should also be reflected in chapter 4.6.2.	Replace recommended by mandatory	Withdrawn
Fr4	4.6.3	1 st paragraph second bullet	ed	The wording for fast transient pulses used a "shall" for connection to the 1 kΩ to 50 Ω adapter when in 4.6.2 the used of a 1 kΩ to 50 Ω adapter is recommended and not mandatory.	Replace : "For fast transient pulses, use the setup shown in Figure 3b . The output of the capacitor shall be connected to the 1 kΩ to 50 Ω adapter. The adaptor is connected to an oscilloscope configured for 50 Ω input. The measured peak pulse level is corrected for this adaptor. The capacitor shall be placed in a shielded box which shall be grounded. The 50 Ω coaxial cable shall be connected to this box. By : "For fast transient pulses, use the setup shown in Figure 3b . The capacitor shall be placed in a shielded box which shall be grounded. The output of the capacitor shall be connected with a 50 Ω coaxial cable to an oscilloscope configured for 50 Ω input either directly or through the 1 kΩ to 50 Ω adapter. If a 1 kΩ to 50 Ω adapter is used, the measured peak pulse level shall be corrected for this adaptor.	Not accepted
Fr5	4.6.3	Figure 3b	ed	The used of a 1 kΩ to 50 Ω adapter is recommended and not mandatory.	Key 6 : Replace: " 1 kΩ to 50 Ω adapter" by "1 kΩ to 50 Ω adapter (if used) "	Not accepted
US 13	4.6.3	1 st bullet point under paragraph 1	ed	Text states that "The transient pulse level shall be measure using a high impedance passive probe." No parameters are provided regarding the characteristics of this probe. Text should reference ISO 7637-2.	Proposed text change: "The transient pulse level shall be measure using a high impedance passive probe whose characteristics conform with that delineated in ISO 7637-2"	Accepted with addition to reference to clause 5.5 of ISO 7637-2
US 14	4.6.3	Figure 3a	ed	Figure key lists passive probe. Should also include reference to ISO 7637-2	Proposed text change: "6. high impedance passive probe (see ISO 7637-2)"	Accepted see US 13

Fr6	4.6.4	4 th and 5 th paragraph	ed	These two sentences are not exactly the same than those in paragraph 4.4 (3 and 4th paragraph) which concerns general test setup conditions for DUT insulation and grounding.	Deleted the two paragraphs.	Accepted see US4
Fr7	4.6.4	Figures 4a, 4b, 5a, 5b	ed	The 50 mm distance should be a maximum distance.	Modify Figures 4a, 4b, 5a, 5b by replacing "50" by " ≤ 50 " for the distance between the DUT and the capacitor connection.	Accepted with 100 instead of 50 mm
Fr8	4.6.4	Figures 4b, 5b	te	The distance between metallic box (8) and DUT I/O line (5) may influence the test result.	Modify Figures 4b, 5b by replacing " ≤ 50 " by : " (50 ± 5) ".	Not accepted but decision to change to ≤ 100 mm
Fr9	4.6.4	Last paragraph	ed	Figures 5a and 5b are examples when figures 4a and 4b aren't. Therefore, it is preferable to have the distance requirements stated in the wording.	Add after last paragraph of 4.6.4 : "The distance between the I/O line injection point and the DUT shall be lower or equal to 50 mm. For fast transient, the distance between the I/O line injection point and the capacitor shielded box shall be (50 ± 5) mm". Delete "Example of" in the title of Figures 5a and 5b.	Accepted with 100 mm Not accepted but decision to change to ≤ 100 mm Accepted for title modification.
Fr10	4.6.4	Figures 4a, 4b, 5a, 5b and paragraph 4.6.4	ed	There is no consistency between the 4 Figures for the distance between I/O line and edge of the ground plane (no requirement in Figure 4a and 4b).	Modify Figures 5a and 5b by replacing "100" by " ≥ 100 " Add in Figures 4a and 4b an arrow with " ≥ 100 " Between I/O line and edge of the ground plane. Add at the end of 4.6.4: "The distance between the I/O line and the edge of the ground plane shall be greater of equal to 100 mm".	Accepted
US 15	4.6.4	paragraph 4 & 5	ed	Information regarding DUT setup is redundant with information provided in 4.4	Delete paragraphs 4 and 5 per US4	Accepted see US 4
US 16	4.6.4	Whole section	ed	There is no mention of including or not including DUT (ground and supply) lines as is delineated in section 4.5.4	Need to have consistency between test methods. However, specific language needs to reconcile with US8.	Withdrawn
US 17	4.6.4	Figure 4a, 4b, 5a, 5b	ed	Figure Key # 8 references paragraph 4.6.1 for capacitor information. Better to reference Table 2 which contains the specific information	Change text for Key # 8 to: "8. high-voltage non polarized leaded capacitor (see Table 2)"	Accepted
US 18	4.6.4	Figure 4a, 4b, 5a, 5b	ed	Dimensions between DUT and edge of ground plan is shown to be >100 mm. This is not consistent with ground plane requirements in 4.3	Update figures to show correct dimensions.	Withdrawn
US 19	4.6.4	Figure 5a, 5b	ed	Superscript by capacitors (a, b). "b" does not exist	Update figure. Replace "8 ^{a,b} " with "8 ^a "	Withdrawn
US 20	4.7.3	1 st paragraph	ed	Figure references are incorrect.	In first sentence, replace "Figures 10 and 11" with "Figures 8 and 9".	Accepted

US 21	4.7.3	1 st paragraph	ed	Sentence structure causes confusion	<p>Propose changing the text from:</p> <p>"The transient pulses, as described in Figures 8 and 9, applied to the injection probe and measured with a high impedance oscilloscope according to the verification test set-up defined in Figure 6 shall fulfill the requirements stated in Table 3."</p> <p>To:</p> <p>"The transient pulses, described in Figures 8 and 9, when applied to the injection probe are measured with a high impedance oscilloscope according to the verification test set-up defined in Figure 6. Using this configuration, the transient pulse timing characteristics shall fulfill the requirements listed in Table 3."</p>	Accepted
US 22	4.7.3	Last paragraph before Table 3	ed	<p>Last sentence in paragraph states:</p> <p>"Information on the process used for estimating the inductive coupling factor is described in Annex C." What is the purpose of Annex C. Does anyone use it?</p>	Delete Annex C unless there is a technical reason to keep it.	Not accepted
Fr11	4.7.4	2 nd sentence	ed	ISO 7637-3 concerns coupling via lines other than supply lines and therefore DUT 12 / 24 V supply lines shall not be included in the ICC.	<p>Replace: "The DUT 12/24 V power lines (ground and supply) should not be included in the ICC."</p> <p>By :</p> <p>"The DUT 12/24 V power lines (ground and supply) shall not be included in the ICC."</p>	Not accepted
Fr12	4.7.4	4 th and 5 th paragraph	ed	These two sentences are not exactly the same than those in paragraph 4.4 (3 and 4 th paragraph) which concerns general test setup conditions for DUT insulation and grounding.	Deleted the two paragraphs.	Accepted see US 4
Fr13	4.7.4	Figure 7	ed	The wording "Dimensions in millimetres" in missing above the Figure.	Add the wording.	Accepted
US 23	4.7.4	1 st paragraph	te	Text states that DUT supply lines (ground and supply) are not to be included in CCC. However ground or supply delivered from DUT to auxiliary equipment (sensors, actuators) is okay to do. This is the same comments as delineated in section 4.5.4 (CCC method). As stated in US 8, the approach is fundamentally flawed because it assumes differences in source/load impedance.	Propose same approach as US 8	Withdrawn

US 24	4.7.4	2 nd paragraph	te	Text states that ICC test can be performed either as shown in Figure 7 or with a straight harness as implemented in ISO 11452-4. Within ISO 11452-4, the separation distance between DUT and edge of ground plan is to > 500 mm which conflicts with requirements in 4.3.	Delete entire paragraph. Test will be performed in accordance with that illustrated in Figure 7.	Withdrawn
Fr14	5.3.2	Figure 8 and Figure 9	ed	Figure 8 shows a negative pulse when the title is for positive 2a. Figure 9 shows a positive pulse when the title is for negative 2a.	Exchange Figure 8 and Figure 9 (with no change of the Titles).	Accepted
De2	5.3.2	Fig. 8 Fig. 9	ed	Figure and caption do not fit to each other Figure shows positive pulse, caption says negative, and vice versa	Exchange Fig. 8 and 9 without changing the captions	Accepted
US 25	5.3.2	3 rd paragraph	ed	Figures 10 and 11 are referenced. It should be Figures 8 and 9.	Change sentence to: “The transient pulse shapes and parameters are given in Figures 8 and 9.”	Accepted
US 26	5.3.2	Figure 8 & 9	te	The parameters listed for tr and t1 do not align with ISO 7637-2 (2011). In 7637-2, tr is listed to be 1 (-0.5 +0) usec whereas Figure 8/9 report it as ≤ 1usec. In 7637-2, t1 is listed to be 0.2 – 5 sec whereas Figure 8/9 report it as 0.5 – 5s.	Align parameters listed in Figures 8 and 9 with those values in ISO 7637-2	Accepted with updated Figures
De3	5.3.3	Fig. 10	ed	Caption does not include pulse polarity	Change caption: Fast transient pulse – negative 3a	Not accepted
De4	5.3.3	Fig. 11	ed	Caption does not include pulse polarity	Change caption: Fast transient pulse – positive 3a	Not accepted
US 27	5.3.3	2 nd paragraph		Figures 8 and 9 are referenced. It should be Figures 10 and 11.	Change sentence to: “The transient pulse shapes and parameters are given in Figures 10 and 11.”	Accepted
US 28	5.3.3	Figures 10 & 11	ed	Print quality is terrible. Barely legible	Replace Figures 10 and 11 with higher quality graphics	Noted
US 29	5.4	1 st bullet point	ed	Text states: “- typical coupling capacitance between cable and clamp is around 100 pF”. The term “around” should be replaced by “~” or “approximate”	Replace text with: “- typical coupling capacitance between cable and clamp is approximately 100 pF”.	Accepted

US 30	5.4	2 nd bullet point	ed	Text states: “- applicable diameter range of harness: 4 mm to 40 mm.” This statement is not relevant considering conductors are to be placed flat per paragraph 3 of 4.5.4.	Delete bullet point.	Accepted
US 31	Annex C	Whole section	ed	Question the need for this section. Per US22, does anyone use this information?	Delete Annex C unless there is a technical reason to keep it.	Not accepted
Fr15	Annex C	2 nd paragraph	ed	The wording "The common path of lines within a wire harness defines the coupling network " title is not clear enough. Does it represent the length of possible coupling path on the vehicle or the length of the injection probe ?	Add necessary wording to precise what is the coupling network length.	Accepted with additional wording

Revised Figures are shown below:

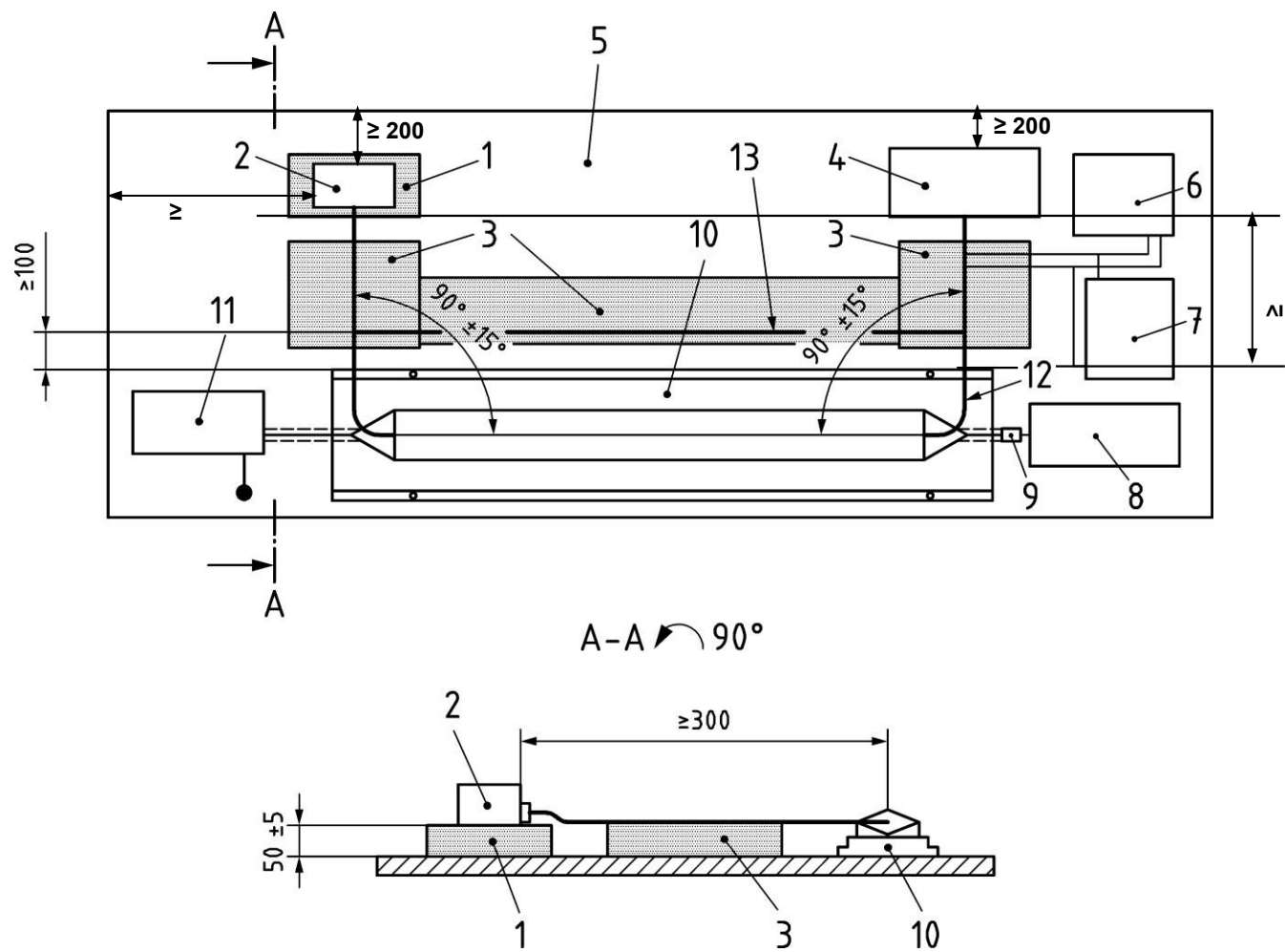


Figure 2 – Test set-up for CCC method – DUT Test

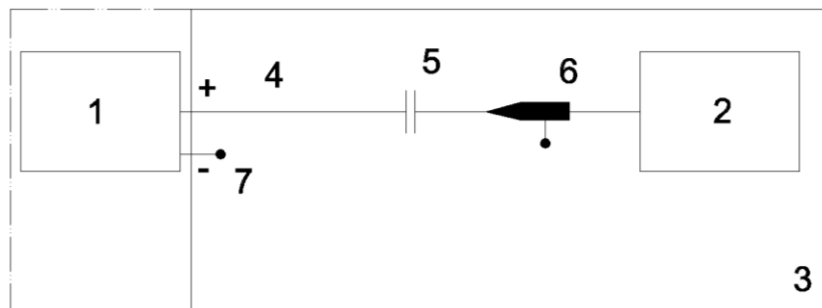


Figure 3a – Set-up for slow transient pulses level adjustment – DCC method

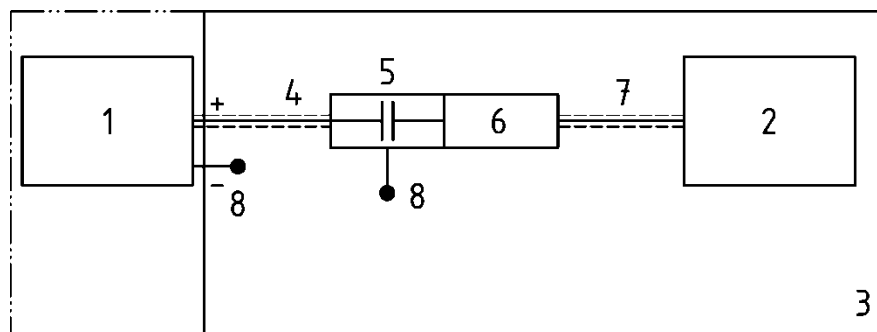


Figure 3b – Set-up for fast transient pulses level adjustment – DCC method

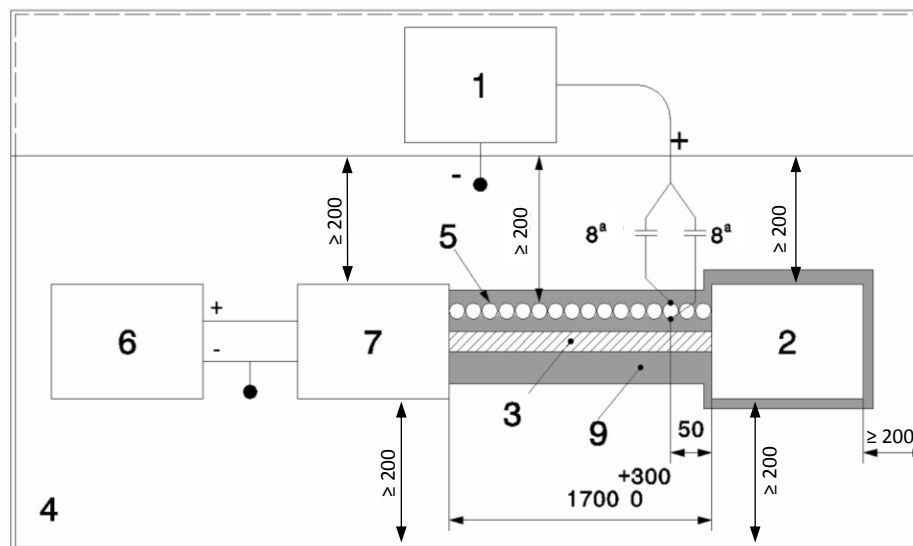


Figure 4a – Test set-up for DCC method – Slow transients – DUT Test

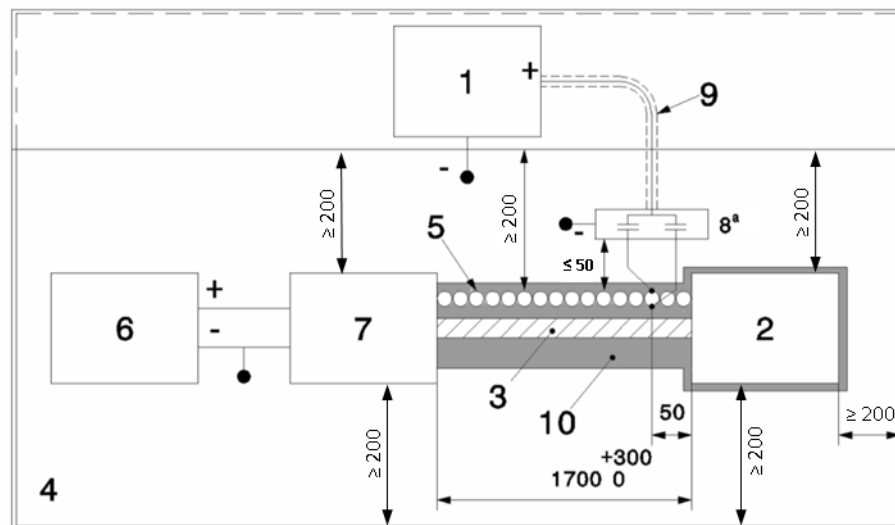


Figure 4b – Test set-up for DCC method – Fast transients – DUT Test

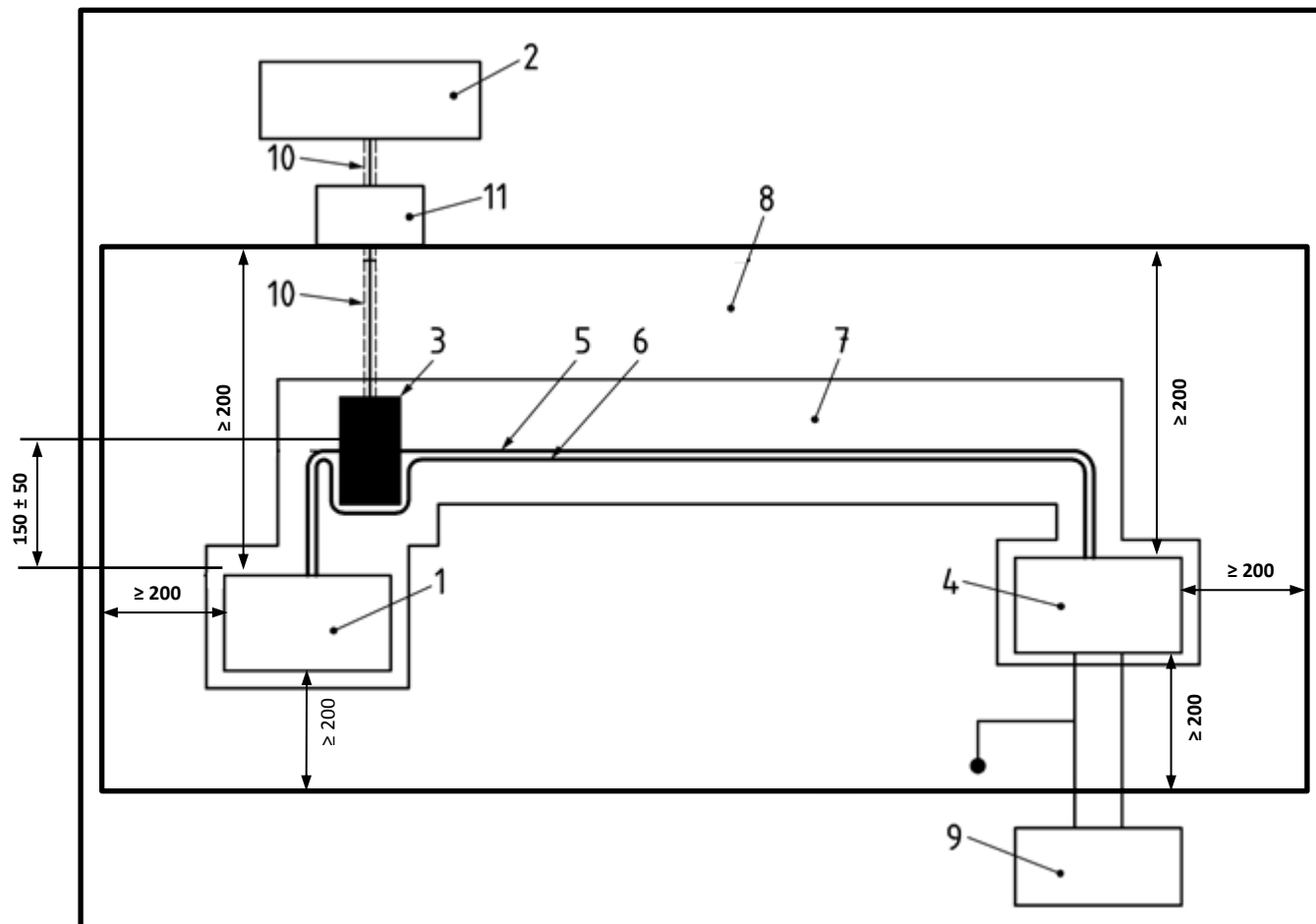


Figure 7 – Test set-up for ICC method – DUT test