Annex:
Alien Crosstalk Test Procedure

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Annex: Alien Crosstalk Test Procedure

This Annex describes a procedure for measuring ANEXT loss and AFEXT loss between pairs of adjacent link segments consisting of cables and in-line connectors. The procedure is required to assess the alien crosstalk performance of the link segments as specified in 98.4.4.3 Coupling parameters between type A link segments and 98.4.4.4 Coupling parameters between type B link segments. This procedure is intended for use in the laboratory, to evaluate that the link segments complies with the PSANEXT loss and PSAACRF requirements, when properly installed.

Alien crosstalk test configurations

Alien crosstalk test configurations

Alien crosstalk coupled between type A link segments

The limits for PSANEXT and PSAACRF are based on the alien crosstalk test configuration in figures (TBD). The automotive link segment test configurations are derived from two automotive industry use cases representative of common scenarios. Measurements to be performed at 23 deg +/-5 deg C (TBD) relative humidity 25%-75% (TBD).

Multiport test fixtures shall be used for multiport link segments. The number of disturbing ports to be included in the power sum calculation is dependent on the configuration. Significant connectors may be located in the same or other mounting systems in close proximity and shall be assessed as follows. For any given configuration, the determination of which ports to be included can be made based on the ANEXT loss contribution to the disturbed port. If at any frequency point the ANEXT measurement is less than TBD, then the entire ANEXT loss response of that connector combination shall be included in the overall power sum result.

Multiport link segments not under test are terminated in 100 ohms differential mode and common mode (TBD ohms) at both ends.

Alien crosstalk test configurations

Alien crosstalk coupled between type A link segments

The use case 1 alien crosstalk test configuration consists of three link segments of 5 meter length and two inline connectors, equally spaced at 1.66 meter distance. The power sum ANEXT loss between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (98–7). The power sum AACRF between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (98–9).

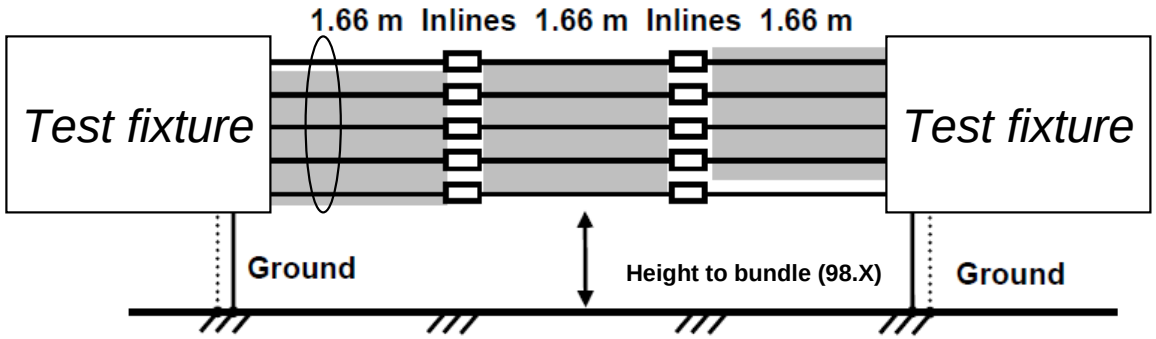


Figure 1: Alien crosstalk test configuration (channel)

Alien crosstalk test configurations

Alien crosstalk coupled between type A link segments

The use case 2 alien crosstalk test configuration consists of 5 link segments bundled together over a 5 meter length with one of the link segments extending unbundled for 3 meters. The 3 meter unbundled section includes 2 inline connectors in addition to the 2 inline connectors in the 5 meter bundled section. The power sum ANEXT loss between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (98–7).
The power sum AACRF between any disturbed type A link segment and the disturbing type A link segments shall meet the values determined using Equation (98–9).

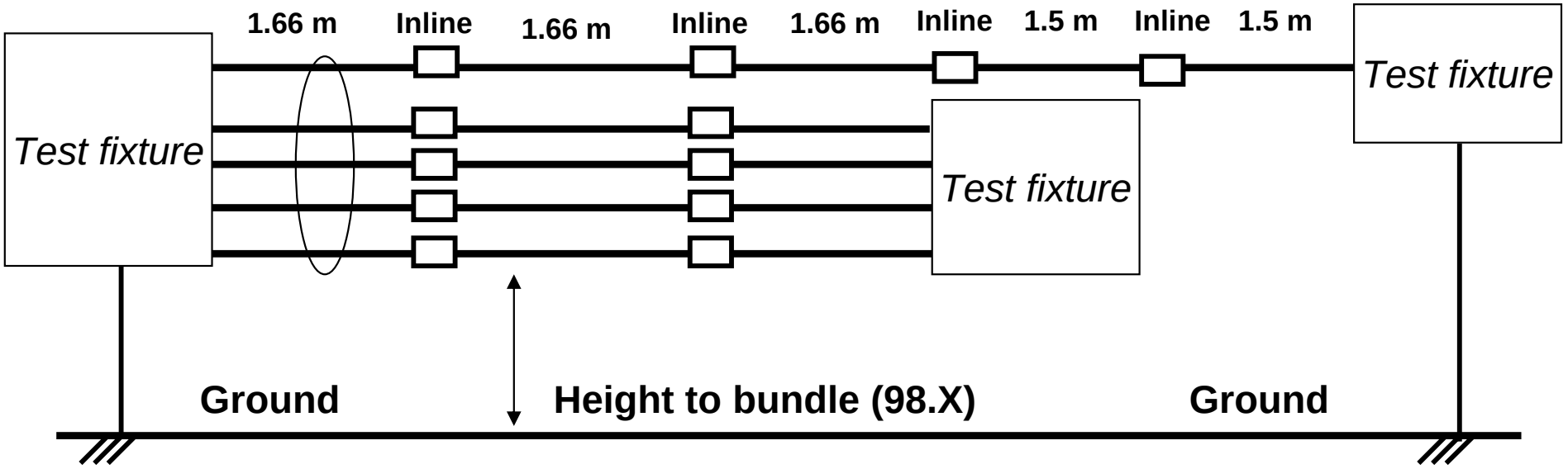
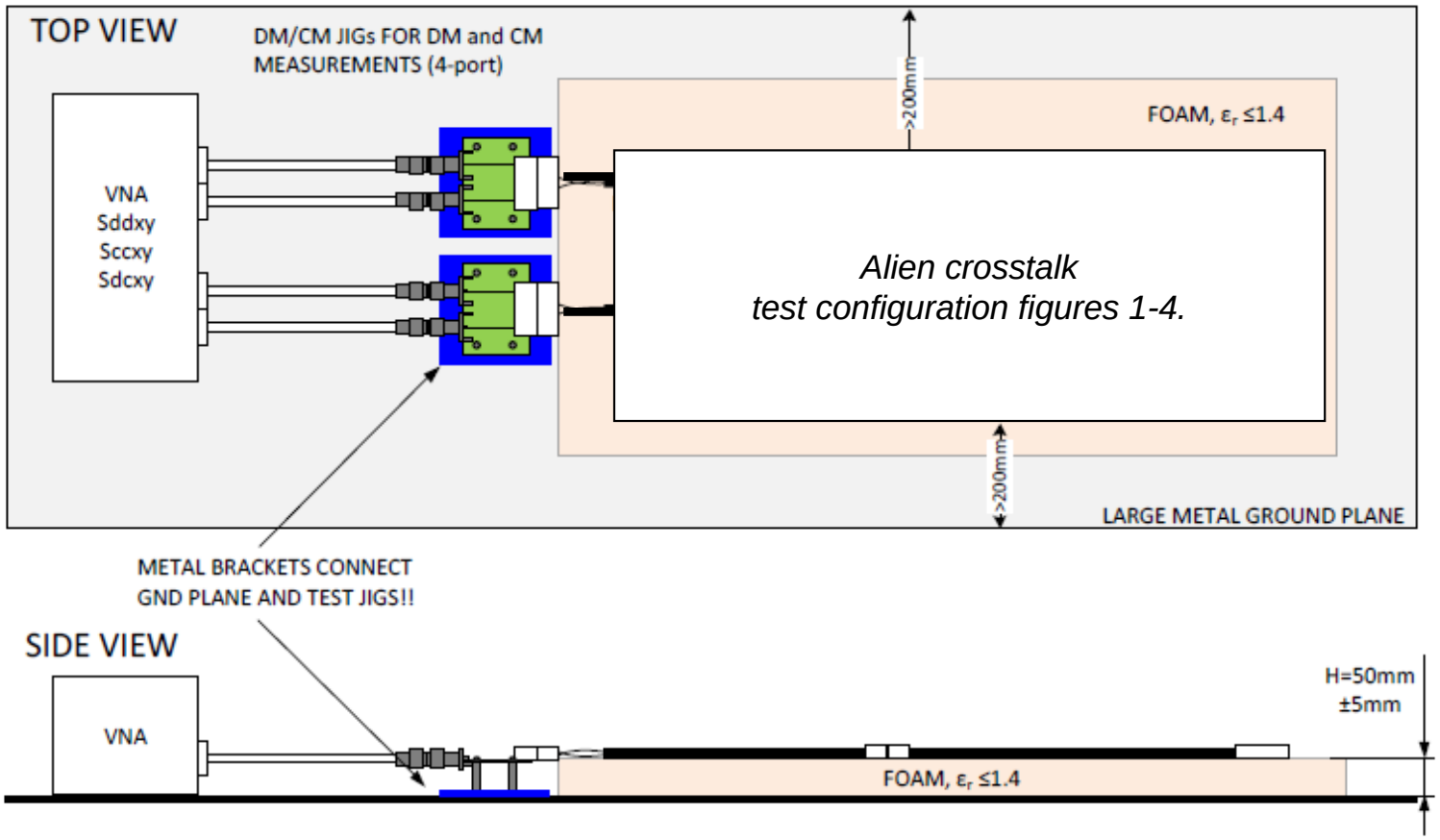


Figure 3. Alien crosstalk test configuration (channel)

Alien crosstalk test configuration (TBD)

The Alien crosstalk measurements are to be performed utilizing the test setup and methodology specified in Annex 98A.



Notes:
1. Two DM/CM jigs are used for all 4-port differential mode and common mode measurements.
2. Brackets provide reference "0V" for CM at the ends of DUT and VNA cables.
3. The entire setup is on a large metal GND plane, which extends at least 200mm beyond the setup.

Alien crosstalk test configurations (current)

Cable bundling

The cable bundle shall be placed on dielectric insulation material (εR < 1.4) of 50 mm height over conducting ground plane. The cables have to be placed within the alien crosstalk test configuration in a four around one configuration as shown in Figure 97B–5.

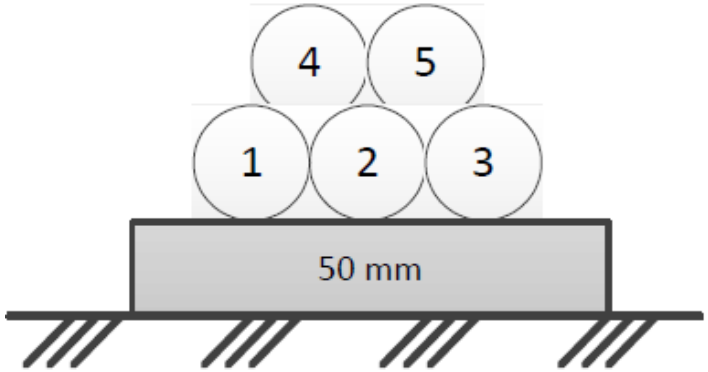


Figure 97B–5—Cable bundle in four around one configuration

The cables should be fixed in their position by means of cable straps or adhesive tape to keep the cables attached together with a maximum distance between the fixation devices of 30 cm (TBD). The measurement fixtures have to be connected to the reference ground plane by means of conducting stands, copper braid, or -foil. Unused ports have to be terminated with a differential impedance of 100 ohms. If it is necessary to split up the wiring harness at the end of the bundle in order to accommodate the measurement fixtures, the length of the area split up is limited to the maximum of 30 cm (TBD).

Alien crosstalk test configurations (revision)

Cable bundling

The cable bundle shall be placed on dielectric insulation material (εR < 1.4) of 50 mm height over conducting ground plane. The cables should be fixed in their position by means of cable straps or adhesive tape to keep the cables attached together with a maximum distance between the fixation devices of 30 cm (TBD). The measurement test fixtures are to be connected to the reference ground plane by means of conducting stands, copper braid, or foil. Cables not under test are terminated in 100 ohms differential mode and (TBD ohms) common Mode at both ends. If it is necessary to split up the wiring harness at the end of the bundle in order to accommodate the measurement fixtures, the length of the area split up is limited to the maximum of 30 cm (TBD).

An example of cable bundling for the five around one alien crosstalk test configuration is illustrated in Figure 97B–5. For use case 2, the link segment extending unbundled for 3 meters is centered in the cable bundle e.g., cable 2 in Figure 97B-5.

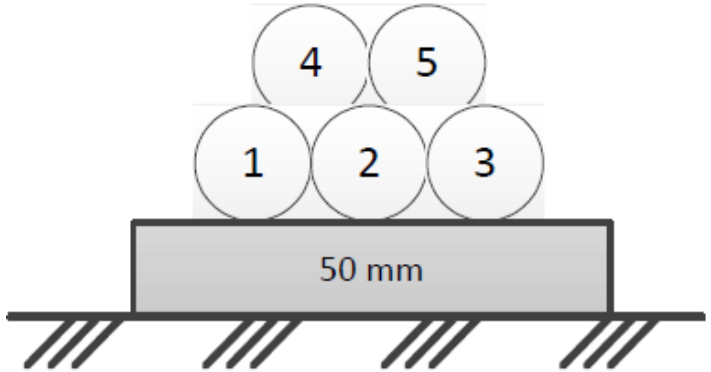


Figure 97B–5—Cable bundle in five around one configuration