
Annex: Alien Crosstalk Test Procedure

**Chris DiMinico MC Communications/Panduit
cdiminico@ieee.org**

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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

Automotive link segment

The automotive link segment test configurations are derived from automotive industry use cases.

Optional link segment

The optional link segment test configurations are derived from automotive industry and industrial cabling use cases.

PSANEXT loss and PSAACRF requirements

The power sum ANEXT loss between a disturbed type A link segment and the disturbing type A link segment shall meet the values determined using Equation (98-7).

$$\text{PSANEXT}(f) \geq \left\{ \begin{array}{ll} 54 - 10 \times \log\left(\frac{f}{100}\right) & 1 \leq f \leq 100 \\ 54 - 15 \times \log\left(\frac{f}{100}\right) - 6 \times \left(\frac{f-100}{400}\right) & 100 < f \leq 600 \end{array} \right\} \text{ dB}$$

The power sum AACRF between a disturbed type A link segment and the disturbing type A link segment shall meet the values determined using Equation (98-9).

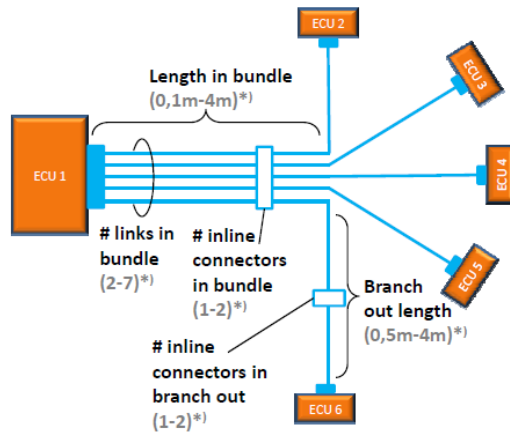
$$\text{PSAACRF}(f) \geq -20 \log \left(10^{\frac{-10 \times \log 0.15 + 38.2 - 20 \times \log \frac{f}{100}}{-20}} + 4 \times 10^{\frac{67 - 20 \times \log \frac{f}{100}}{-20}} \right) \text{ dB}$$

where

f is the frequency in MHz

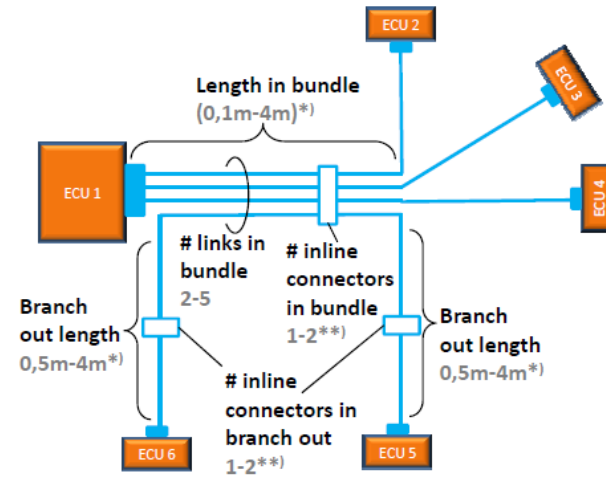
RTPGE Alien XTALK Scenarios

Most Common Scenario ECU output in Star Topology



*) Typical numbers that do NOT add up to a worst case scenario, see later slides

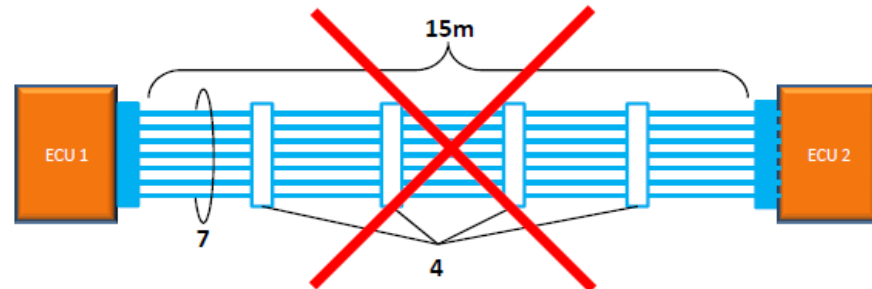
Another possible Scenario Parallel links



*) Typical values
**) Not more than 4 overall

It is extremely unlikely that two RTPGE links run in parallel from source to sink, let alone seven

- There might be four inline connectors in one link (that might be 15m long), but there will never be 4 inline connectors in the bundle
- The above two points are independent from whether the link is 1m or 15m long

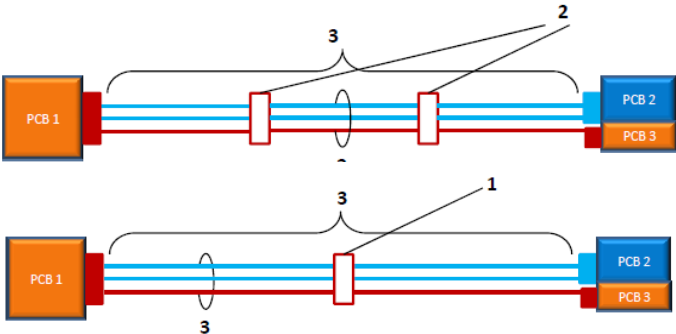


Source: RTPGE Alien XTALK Scenarios matheus_3bp_02_0113

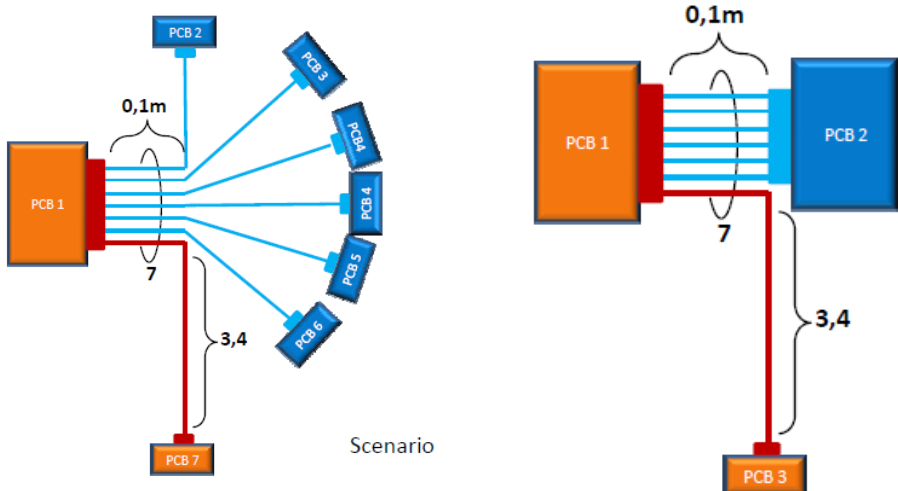
Common Scenarios

#1) 3 parallel RTPGE links

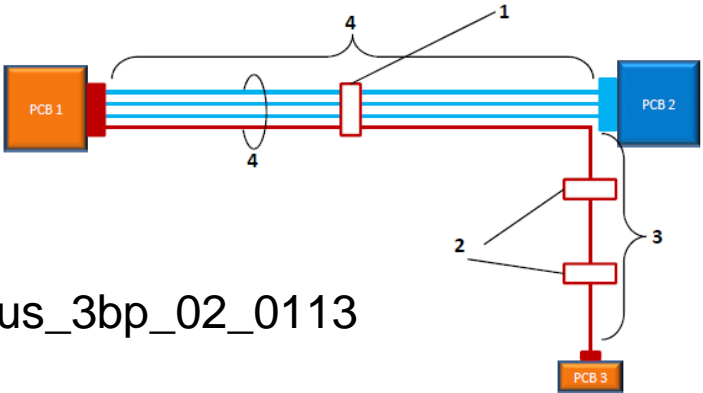
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#2) Central ECU output



#3) Surround view system in trunk



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Common Scenarios

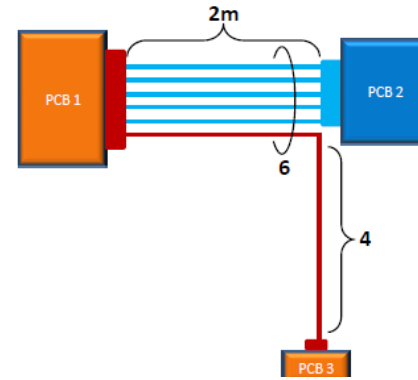
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Con-figuration	# of RTPGE links in bundle	Length of bundle (m)	# of inline connectors in bundle	Additional length of branch out [m]	# of inline connectors in branch out	Notes
#1a	3	3	2	0,1	0	Standard in car scenario
#1a	3	3	1	0,1	0	Standard in car scenario
#2	7	0,1	0	3,4	0	6 around one at one end of the cable (e.g. I&C), 3.5m as average length of high speed data cable
#3	4	4	1	3	2	Camera module in back to front camera, one inline connector in branch out

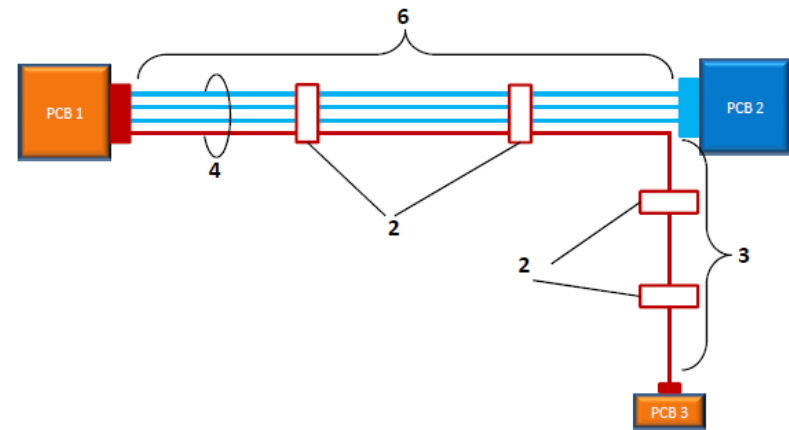
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Special Scenarios

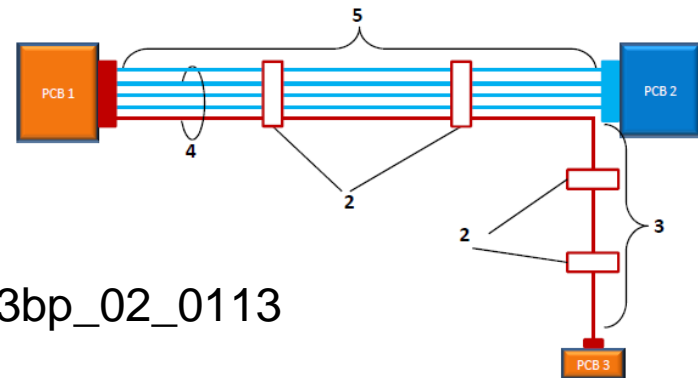
#4) Video Screens in Minivan



#5) Camera Module in extra long Vehicle



#6) Camera Module with more Cameras




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Source: RTPGE Alien XTALK Scenarios matheus_3bp_02_0113

Special Scenarios

Con-figuration	# of RTPGE links in bundle	Length of bundle (m)	# of inline connectors in bundle	Additional length of branch out [m]	# of inline connectors in branch out	Notes
#4	6	2	0	4	0	Video screens in Minivan
#5	4	6	2	3	2	Camera module extra long vehicle
#6	5	5	2	3	2	Camera module with more cameras

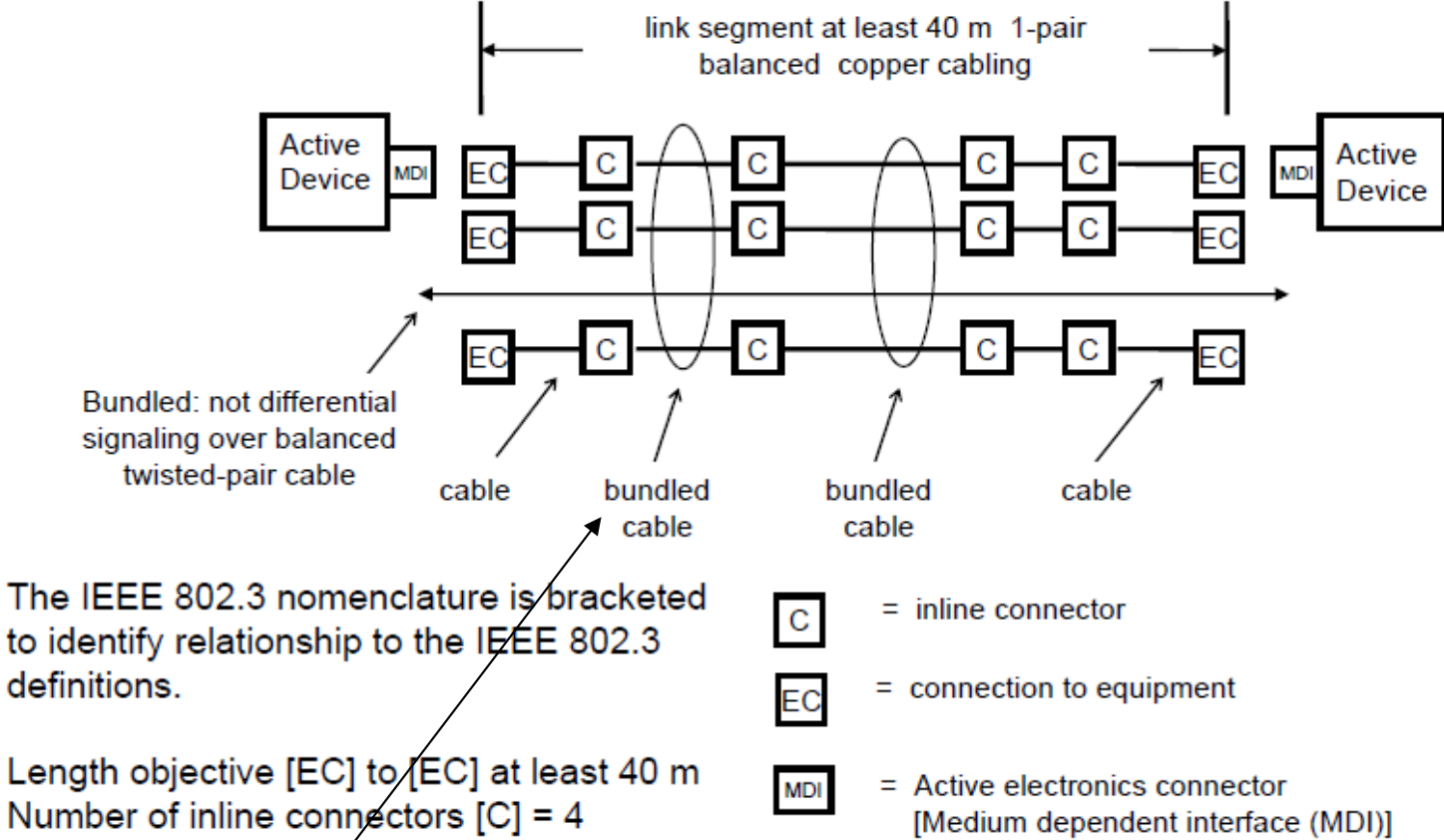
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Alien crosstalk test configurations

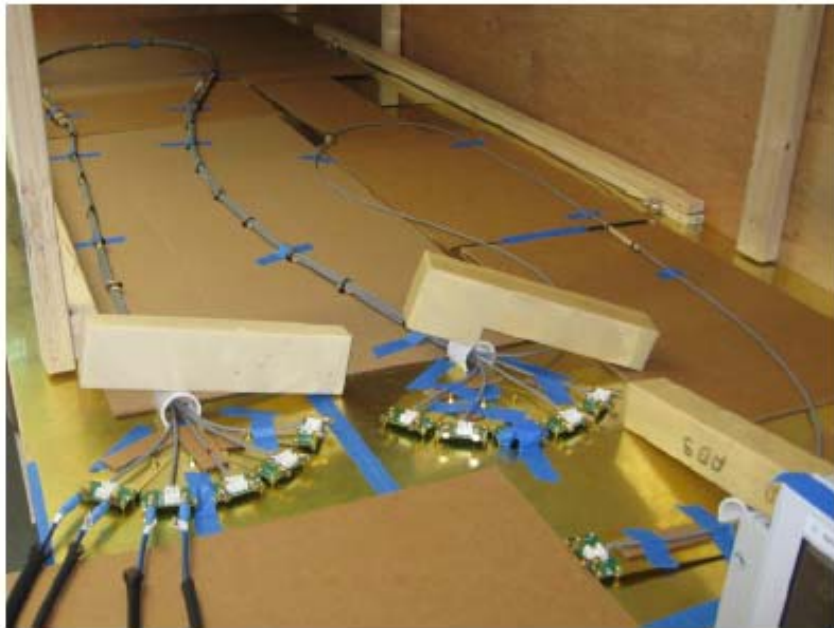
Optional Link Segment



6-around-1

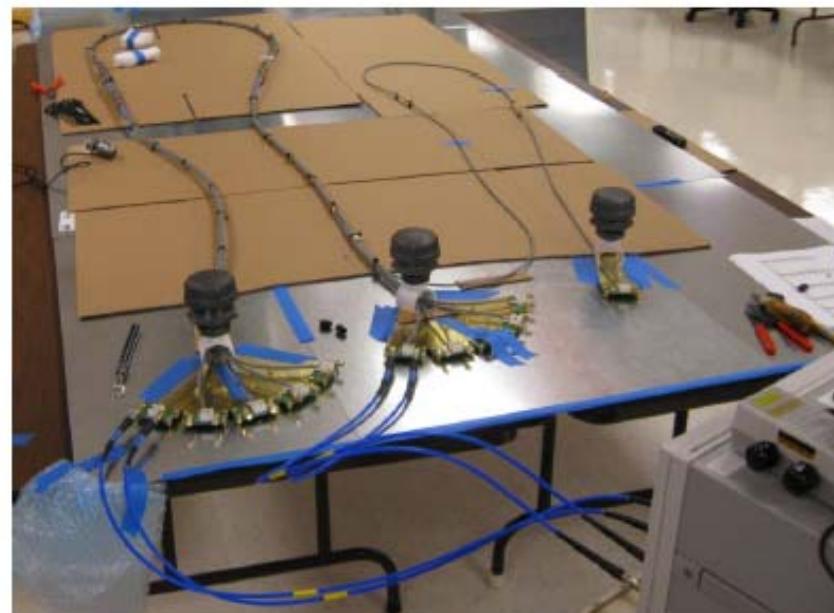
Annex: Alien Crosstalk Test Procedure

Test setup



UNH-IOL Test Setup

CommScope Test Setup



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Annex: Alien Crosstalk Test Procedure

Use Annex 98A test setup

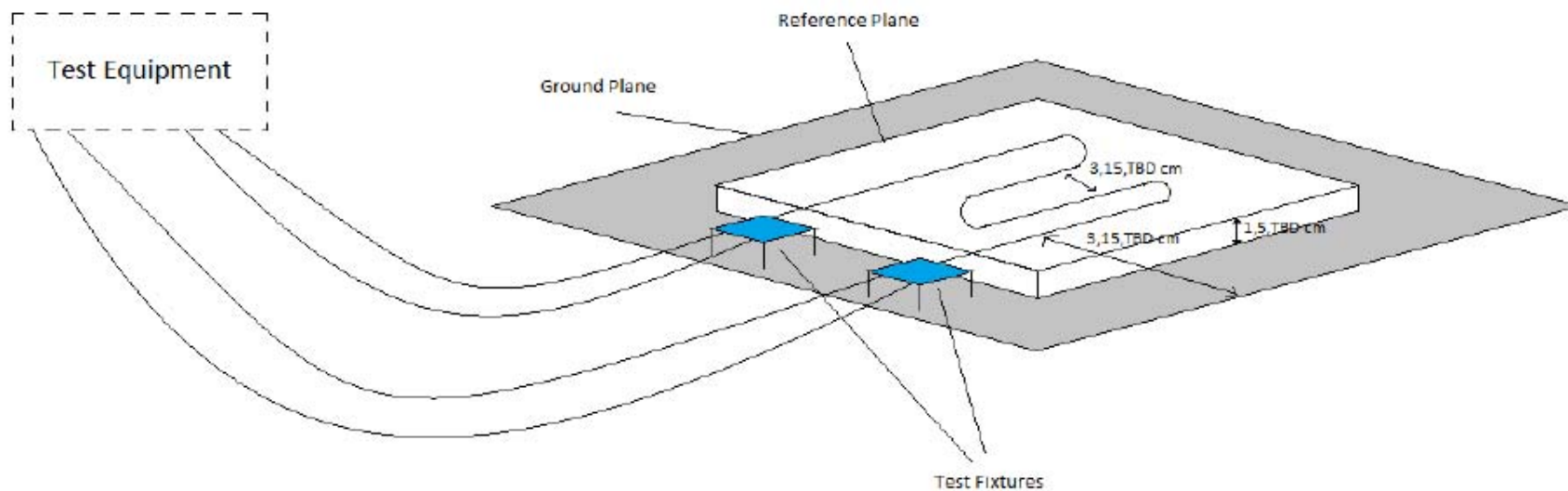


Figure TBD