802.3da Mixing Segment Specifications

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Chris DiMinico
PHY-SI LLC/ MC Communications/SenTekse
cdiminico@ieee.org

Contributors

- David Brandt - Rockwell
- Bob Voss/Paul Wachtel - Panduit
- Stephan Schreiner - Rosenberger
- Michael Paul - ADI

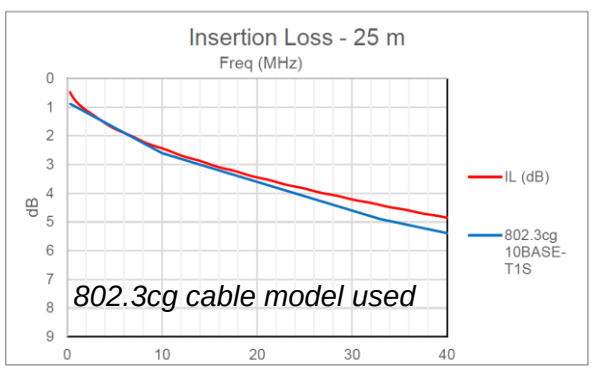
Purpose

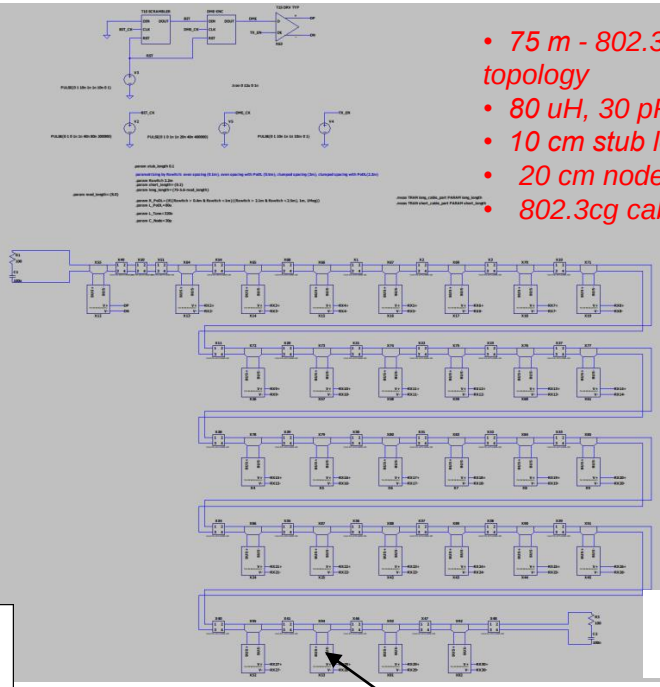
- **Comments D1.3**
- **168.8.2 Mixing Segment return loss Equation (168–4) is TBD**

Background

- **Mixing Segment LT spice model with RX correlation- compensated Tee**

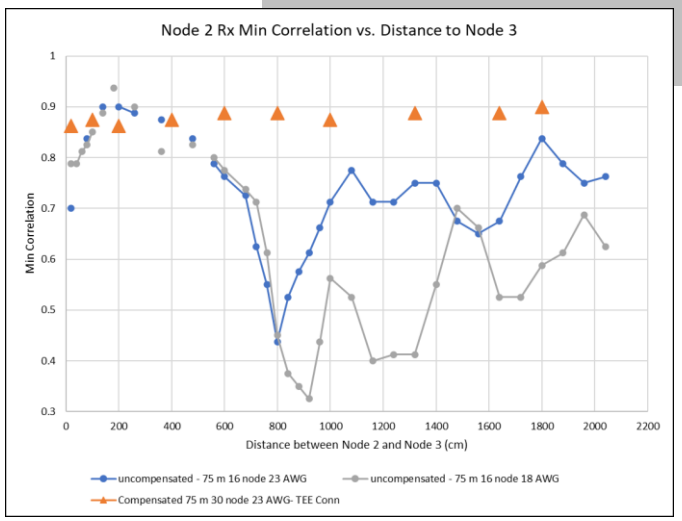
Source: diminico_SPMD_01a_0720.pdf

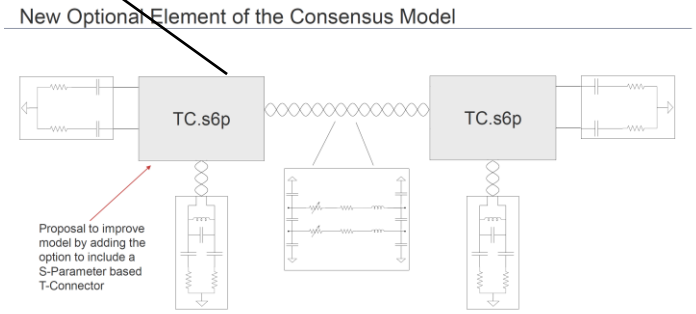




- *75 m - 802.3cg cable model, 30 node, clumped topology*
- *80 uH, 30 pF node parasitics*
- *10 cm stub lengths*
- *20 cm node spacing*
- *802.3cg cable and 18 AWG*

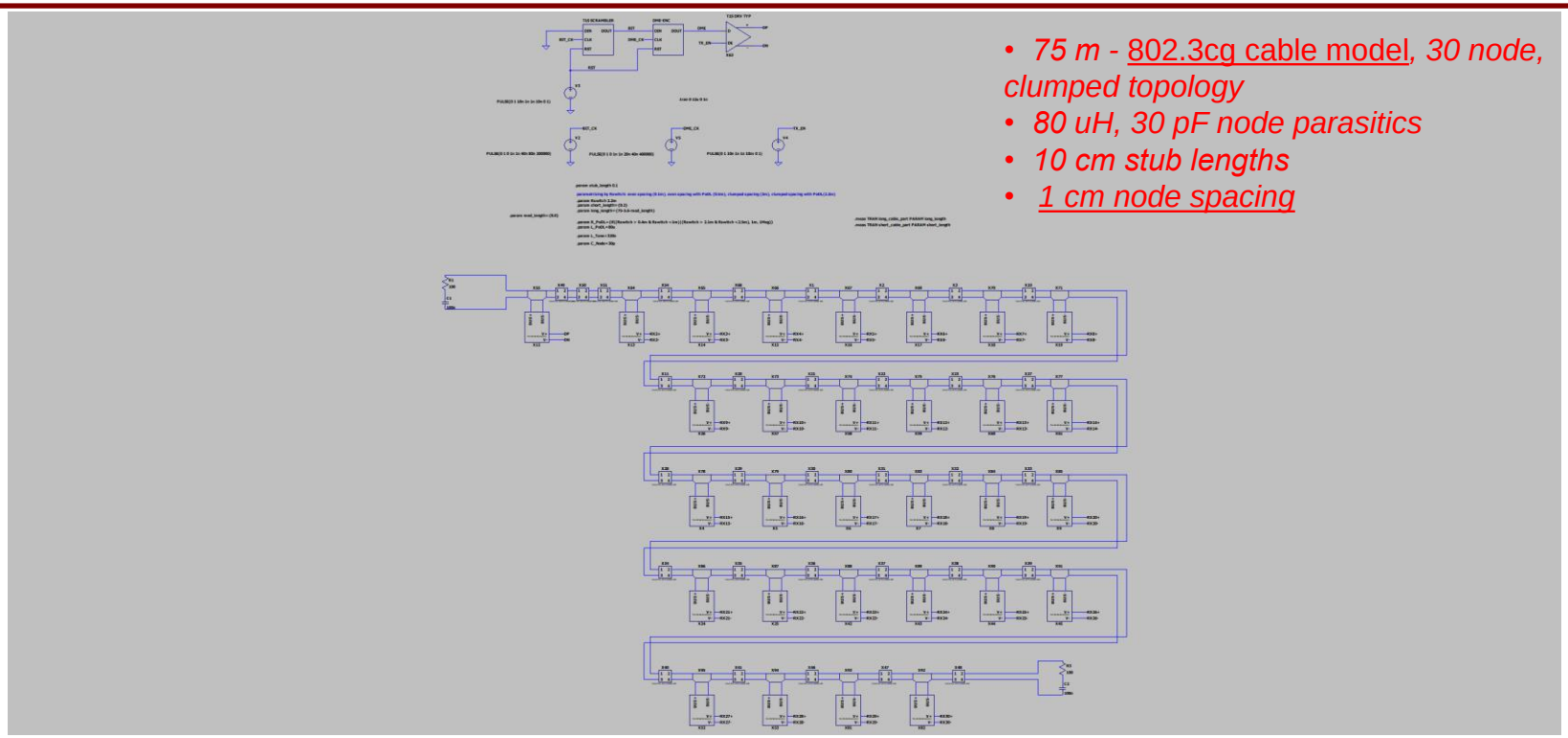
Source: https://www.ieee802.org/3/da/public/0324/diminico_3da_01_031224.pdf





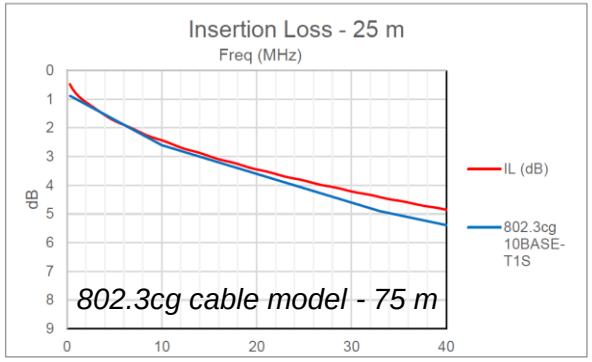
https://www.ieee802.org/3/da/public/100522/schreiner_3da_01_10_05_22.pdf

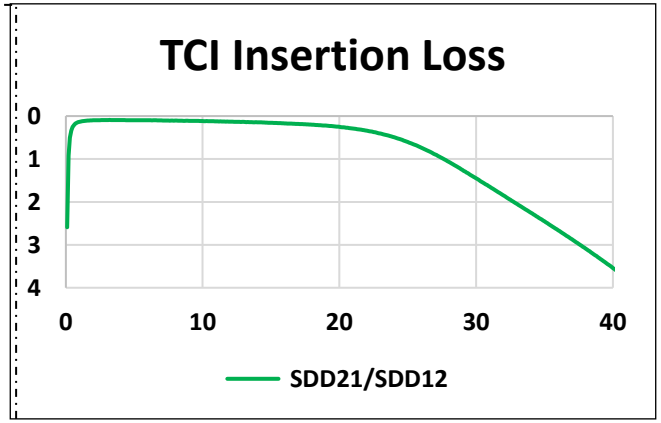
Mixing Segment LT spice model with compensated Tee

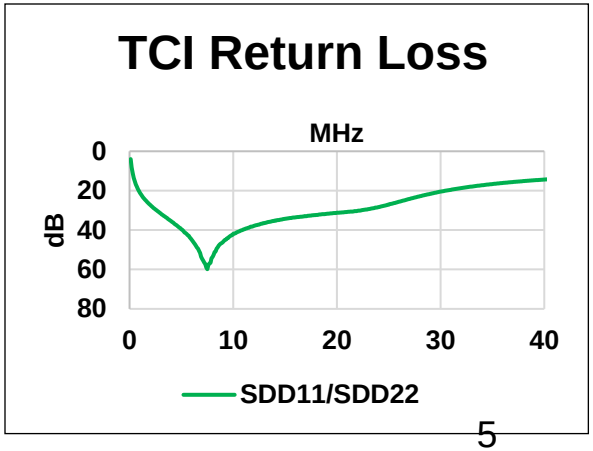


- *75 m - 802.3cg cable model, 30 node, clumped topology*
- *80 uH, 30 pF node parasitics*
- *10 cm stub lengths*
- *1 cm node spacing*

Source: diminico_SPMD_01a_0720.pdf

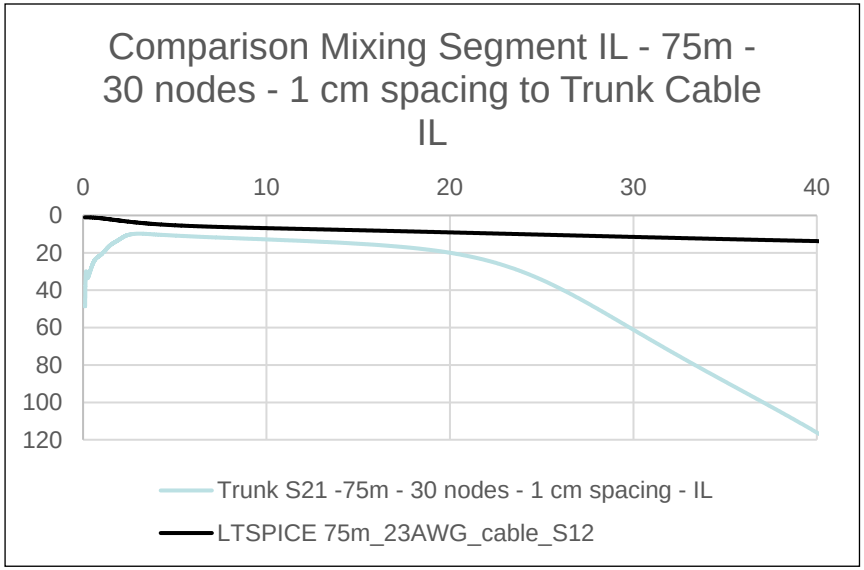


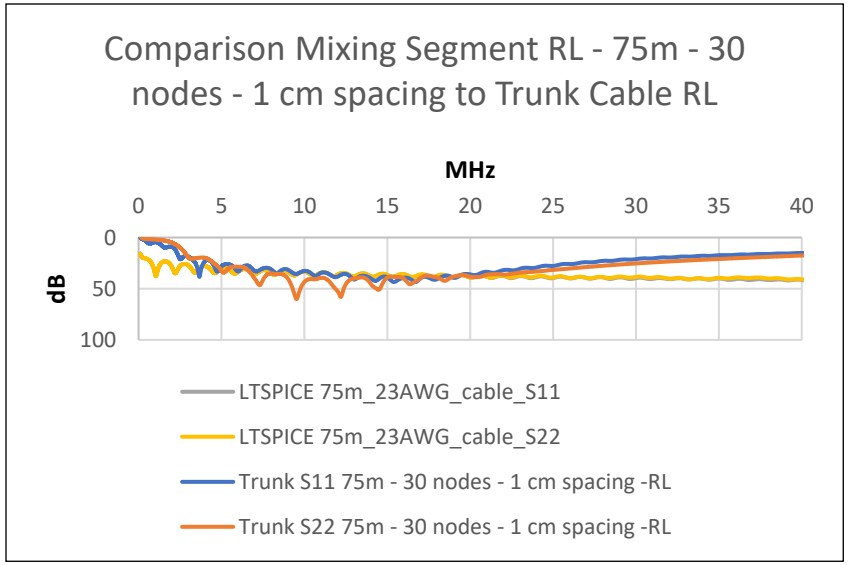




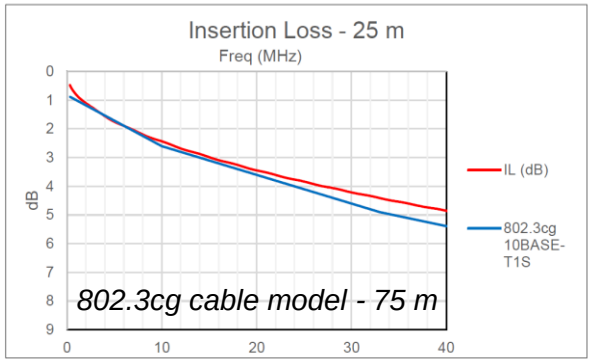
Mixing Segment LT spice model with compensated Tee

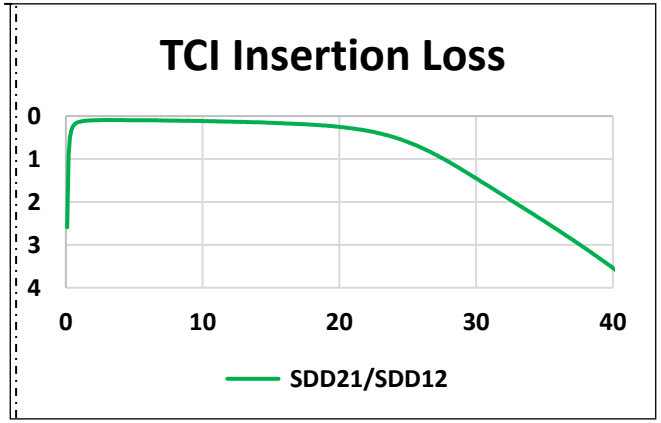
- Mixing segment and trunk cable: insertion loss and return loss between edge termination attachment points (slide 5).

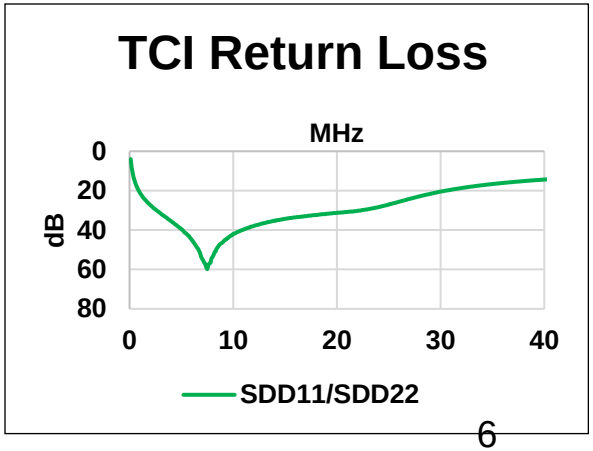




Source: diminico_SPMD_01a_0720.pdf

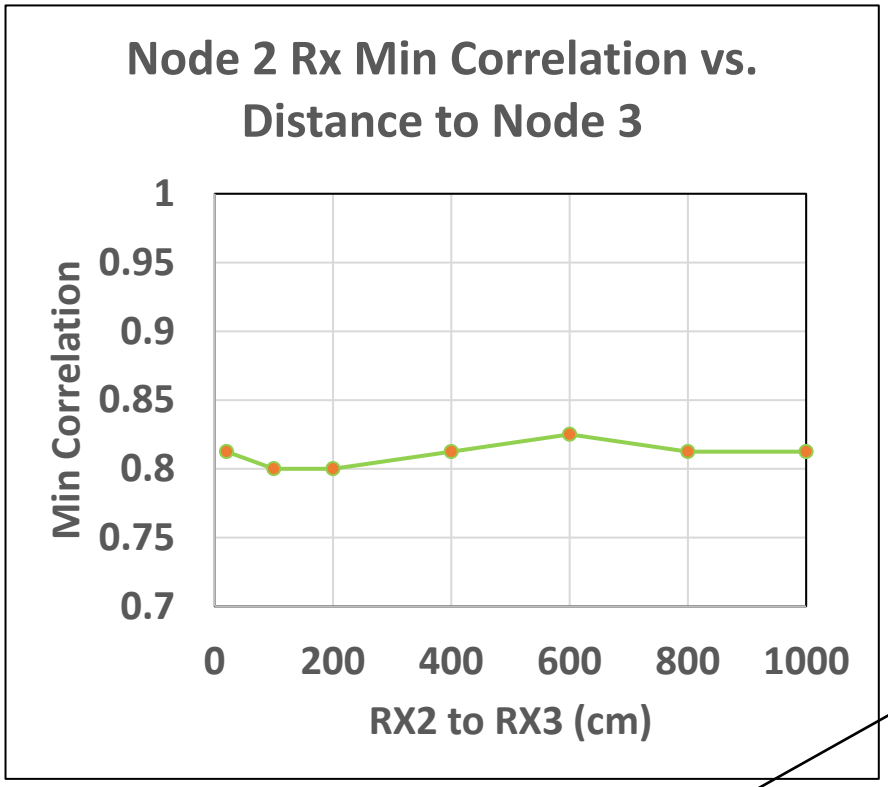


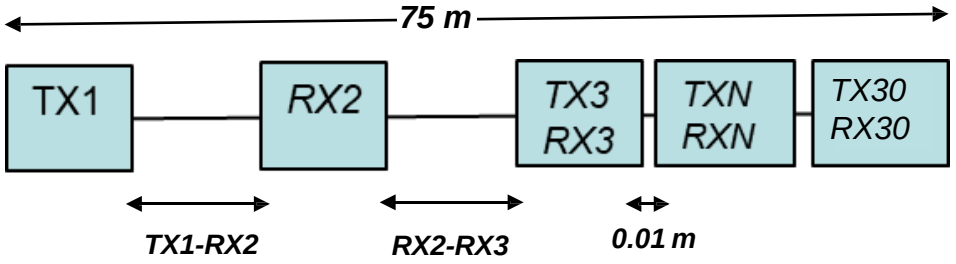


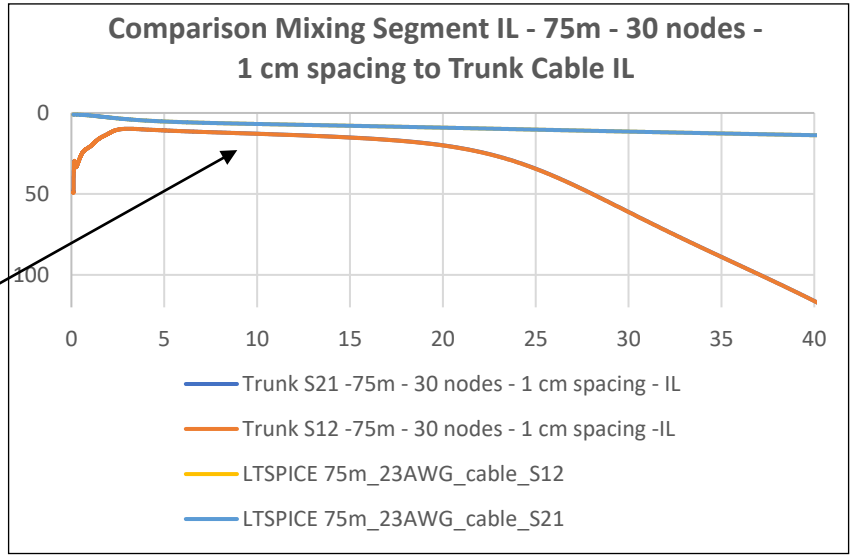


Mixing Segment Correlation Topology

- *75 m - 802.3cg cable model, 30 node, clumped topology*
- *80 uH, 30 pF node parasitics*
- *10 cm stub lengths*
- *1 cm node spacing*





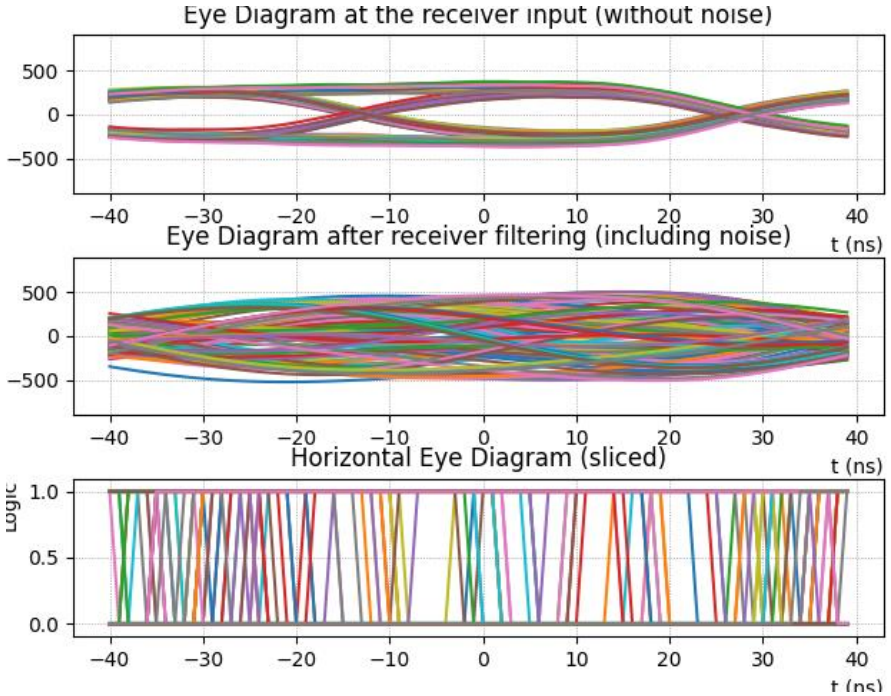


- *Mixing segment IL well behaved; minimal IL deviations*

Mixing Segment LT spice model with compensated Tee

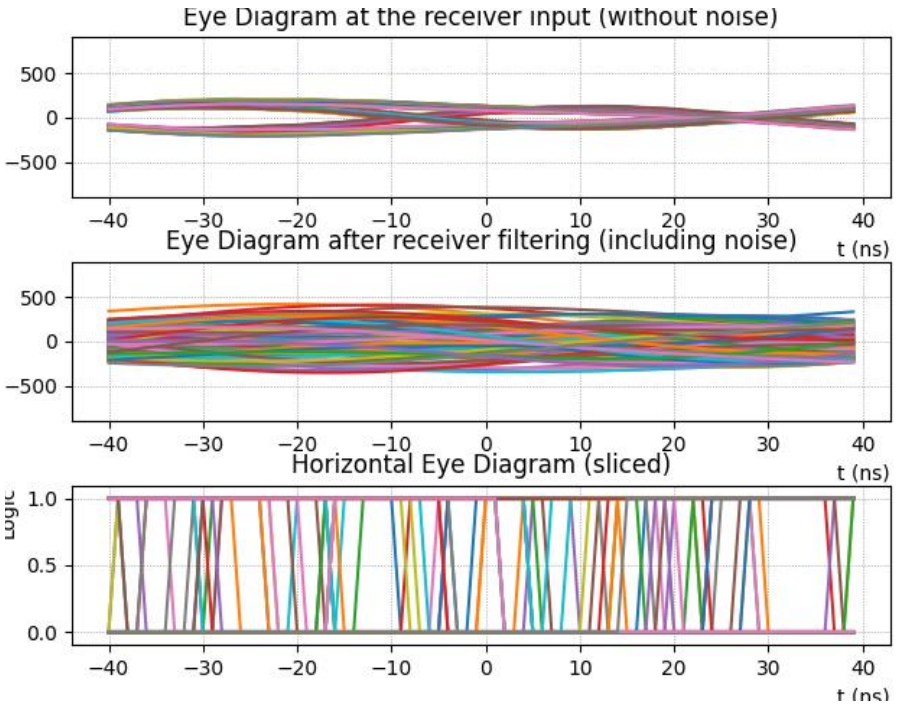
- Mixing segment (slide 5): Eye and RX correlation with noise; node "2" and node "30".

Node "2"



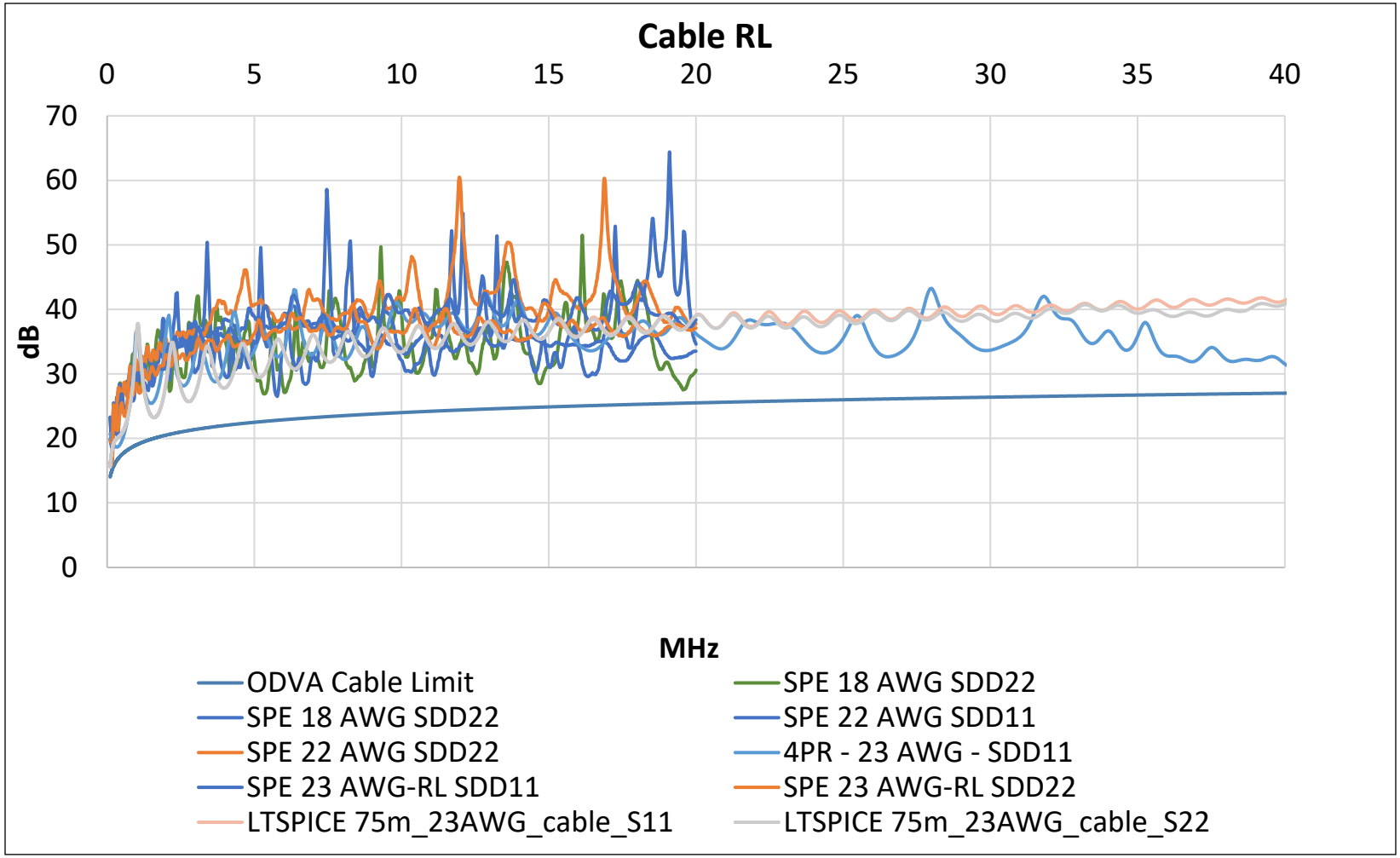
CWA	CORR_AVG	CORR_MAX	CORR_MIN	JITTER	JITTER_MAX
0.000000	0.967110	1.000000	0.862500	2.309426	5.000000
0.050000	0.965231	1.000000	0.812500	2.476145	8.000000
0.100000	0.959299	1.000000	0.762500	2.830755	10.000000
0.150000	0.950459	1.000000	0.700000	3.361484	13.000000
0.200000	0.939719	1.000000	0.625000	4.027576	17.000000
0.250000	0.927581	1.000000	0.500000	4.863266	39.000000

Node "30"



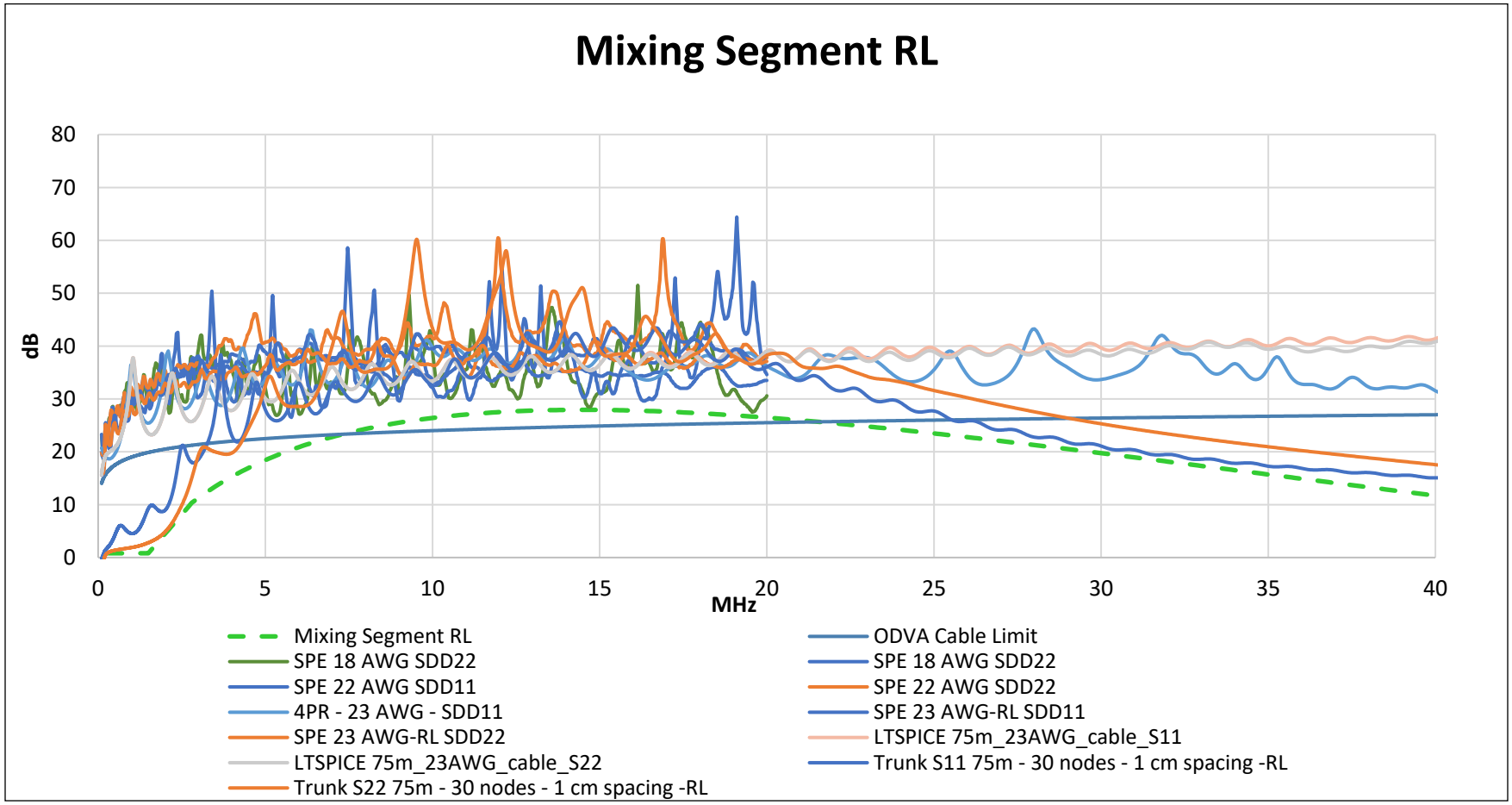
CWA	CORR_AVG	CORR_MAX	CORR_MIN	JITTER	JITTER_MAX
0.000000	0.934511	1.000000	0.825000	3.385856	8.000000
0.050000	0.930980	1.000000	0.687500	3.867826	13.000000
0.100000	0.913585	1.000000	0.500000	5.380310	39.000000

Cable Return loss



168.8.2 Return loss

The mixing segment return loss, with PMA or PMA loads present at the TCI connections. with DTEs attached shall meet the values determined using Equation (168–4) at the edge terminations. The reference impedance is 100 Ω.



RL ≥ 0.8
*(7.34*fMHz)-10.21*
*-42.5+((-20*LOG(fMHz))-(0.024*1/fMhz)+(47.5*SQRT(fMHz))-(6.39*fMHz)+(0.0259*fMHz^2))*

0.3 ≤ f (MHz) < 1.6
1.6 ≤ f (MHz) < 2.8
2.8 ≤ f (MHz)≤ 40

Summary

- **Comments D1.3**
- **168.8.2 Mixing Segment return loss Equation (168–4) is TBD**
- **Use RL equation below (from slide 10)**

RL ≥ 0.8	*0.3 ≤ f (MHz) < 1.6*
*(7.34*fMHz)-10.21*	*1.6 ≤ f (MHz) < 2.8*
*-42.5+((-20*LOG(fMHz))-(0.024*1/fMhz)+(47.5*SQRT(fMHz))-(6.39*fMHz)+(0.0259*fMHz^2))*	*2.8 ≤ f (MHz)≤ 40*