

COM refinement for Annex 120D CDAUI (C2C) suggested in D1.1 comments 29-31, 82, and 122

Richard Mellitz, Intel Corporation

IEEE P802.3bs 400 Gb/s Ethernet Task Force,
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Supporters

- Vittal Balasubramanian, Dell
- Mike Dudek, QLogic Corporation
- John Ewen ,GLOBALFOUNDRIES
- Ali Ghiasi, Ghiasi Quantum LLC
- Kent Lusted, Intel Corporation
- Adee Ran, Intel Corporation
- Upen Reddy Kareti, Cisco
- Phil Sun, Credo Semiconductor
- Tony Zortea, Multi-Phy

Tx Compliance is at TP0a

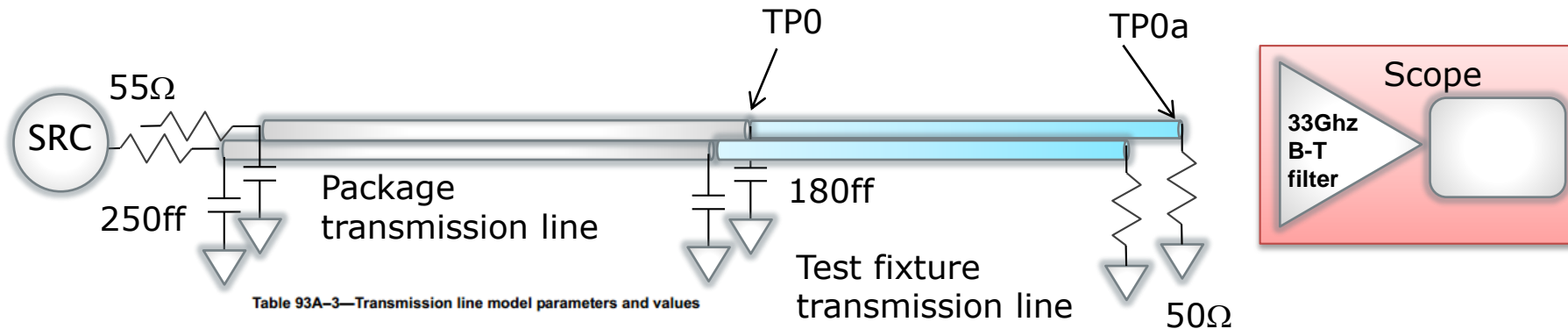


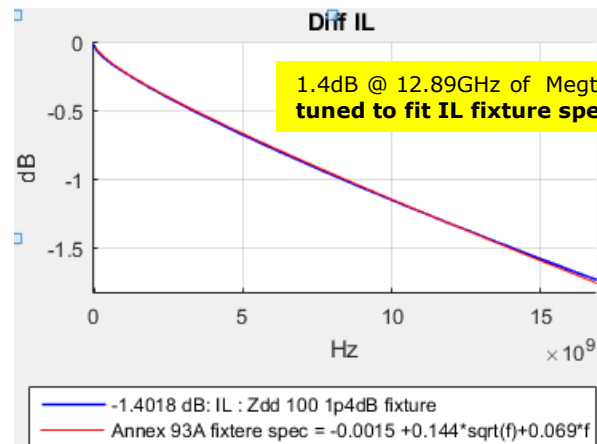
Table 93A-3—Transmission line model parameters and values

Parameter	Value	Units
γ_0	0	1/mm
a_1	1.734×10^{-3}	ns ^{1/2} /mm
a_2	1.455×10^{-4}	ns/mm
τ	6.141×10^{-3}	ns/mm
Z_c	Propose 85	Ω

The scattering parameters for a package transmission line of length z_p are defined by Equation (93A-13) and Equation (93A-14). The units of z_p are mm.

$$s_{11}^{(l)}(f) = s_{22}^{(l)}(f) = \frac{\rho(1 - \exp(-\gamma(f)2z_p))}{1 - \rho^2 \exp(-\gamma(f)2z_p)} \quad (93A-13)$$

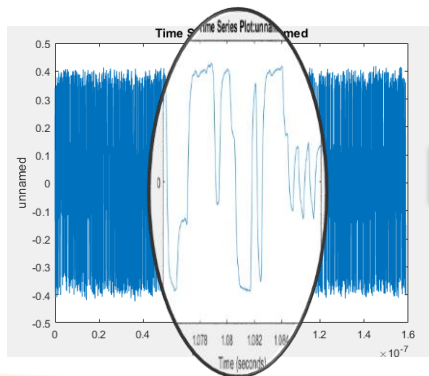
$$s_{21}^{(l)}(f) = s_{12}^{(l)}(f) = \frac{(1 - \rho^2) \exp(-\gamma(f)z_p)}{1 - \rho^2 \exp(-\gamma(f)2z_p)} \quad (93A-14)$$



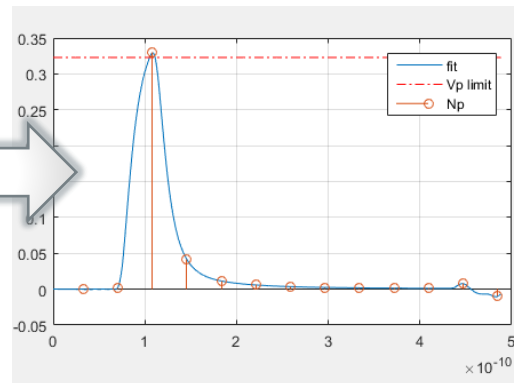
Data rate is 26.5625GHz which is just enough faster than 25.7825Ghz to increase COM package noise and which would be included in COM

- Change
 - $Z_c=85$
 - $A_v=A_{fe}=0.445$
 - $A_{ne}=0.645$
 - $n_p = 13$ (d_p+n_b+1)
 - $SNR_{Tx} = 33.67\text{dB}$ for COM
- SNR_{TX} computed with 6.3 mV of $\sigma_{e_removed}$ = 33.67dB based on SNDR=31dB at TP0a
- $V_f =$
 - 30mm pkg: $.403V \geq .4V$
 - 12mm pkg: $.600V \leq .6V$
 - Checks out to spec
- $V_{peak}/V_f = 0.81 \geq 0.8$ checks out to spec

TP0a
after
filter



FIT

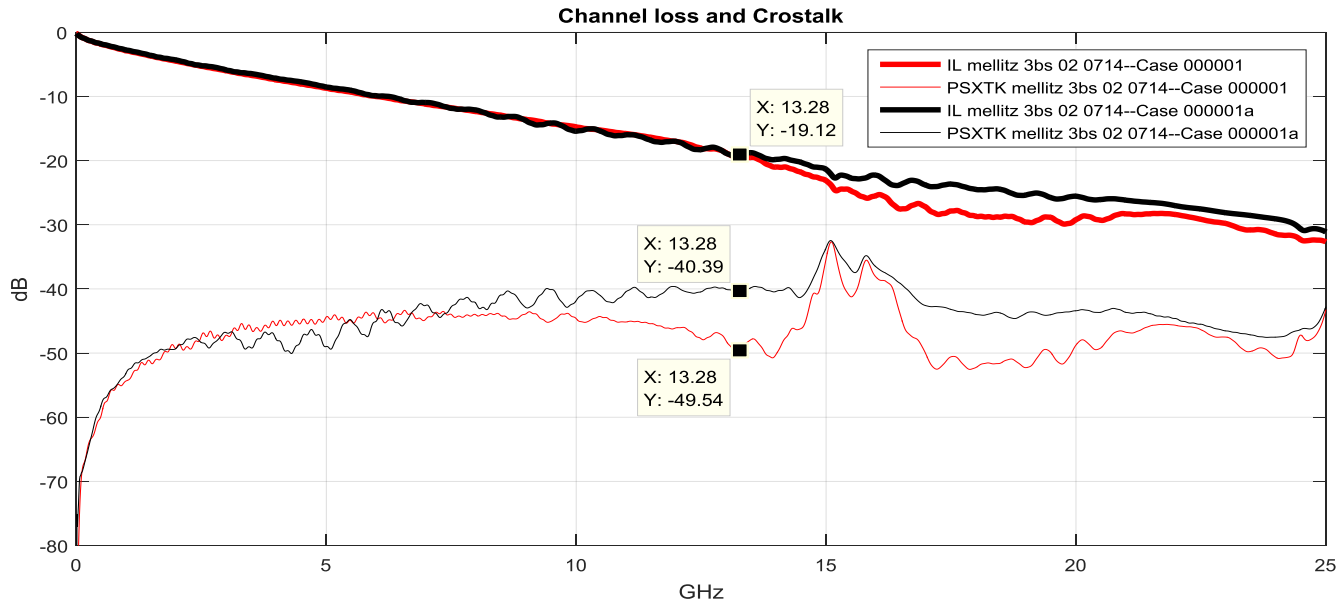


If SNDR is spec'd at 29 dB
 SNR_{TX} should be 31.1dB as in comment 122

COM incremental change results (dB)

healey_3bs_02_1115 cases	1	2	3	4	5	6	7	8	9	10
Insertion loss (dB)	19.6	14.7	6.9	19.5	17.4	11.0	9.2	18.6	19.1	17.4
healey_3bs_02_1115 (zd=40)	2.55	3.3	3.33	2.35	1.83	3.23	3.14	4.19	1.3	2.47
COM 162a d1.1 zd=40	2.65	3.36	3.37	2.43	1.92	3.32	3.18	4.46	1.37	2.53
D1.1 Zd=55	2.36	3.06	2.81	2.20	1.62	2.95	2.75	4.00	1.02	2.13
D1.1 comments 29-31: A_v=A_f=.445,A_n=.645, Zc=85, SNR_Tx = 33.67dB	2.78	3.48	3.47	2.55	2.34	3.58	3.38	4.82	1.16	2.87
D1.1 comment 82 A_v=A_f=.45,A_n=.65	2.81	3.49	3.48	2.56	2.34	3.59	3.38	4.82	1.19	2.89
D1.1 comment 122 DER0=1e-5	3.70	4.39	4.37	3.44	3.20	4.48	4.27	5.72	2.09	3.79
D1.1 comment 122 SNDR=29/SNR_TX=31.1	3.08	3.69	3.66	2.86	2.64	3.76	3.58	4.80	1.66	3.17

Channel index 9 is channel index 1 with improved reflections



- However channel index 9 (case 00001a) resulted in more crosstalk than channel index 1(case 00001)
- Conclusion: 20 dB channels are not very tolerant of crosstalk

COM table Recommendation

Table 93A-1 parameters		
Parameter	Setting	Units
f_b	26.5625	GBd
f_min	0.05	GHz
Delta_f	0.01	GHz
C_d	[2.8e-4 2.8e-4]	nF
z_p select	[1 2]	
z_p (TX)	[12 30]	mm
z_p (NEXT)	[12 12]	mm
z_p (FEXT)	[12 30]	mm
z_p (RX)	[12 30]	mm
C_p	[1.1e-4 1.1e-4]	nF
R_0	50	Ohm
R_d	[55 55]	Ohm
f_r	0.75	*fb
c(0)	0.6	
c(-1)	[-0.15:0.05:0]	
c(1)	[-0.35:0.05:0]	
g_DC	[-15:1:0]	dB
f_z	10.625	GHz
f_p1	10.625	GHz
f_p2	1.00E+99	GHz
A_v	0.45	V
A_fe	0.45	V
A_ne	0.65	V

Table 93A-1 parameters		
Parameter	Setting	Units
L	4	
M	32	
N_b	10	UI
b_max(1)	0.5	
b_max(2..N_b)	0.2	
sigma_RJ	0.01	UI
A_DD	0.02	UI
eta_0	2.60E-08	V ² /GHz
SNR_TX	31.1	dB
R_LM	0.95	
DER_0	1.00E-05	
Operational control		
COM Pass threshold	3	dB
Include PCB	0	Value

g_DC_HP	[-4:1:0]	
f_HP_PZ	0.6640625	GHz

Table 93A-3 parameters		
Parameter	Setting	Units
package_tl_gamma0_a1_a2	[0 1.734e-3 1.455e-4]	
package_tl_tau	6.141E-03	ns/mm
package_Z_c	85	Ohm