

ERL Limit Recommendation for Tp1-Tp4 Copper Cables

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EVERY CONNECTION COUNTS



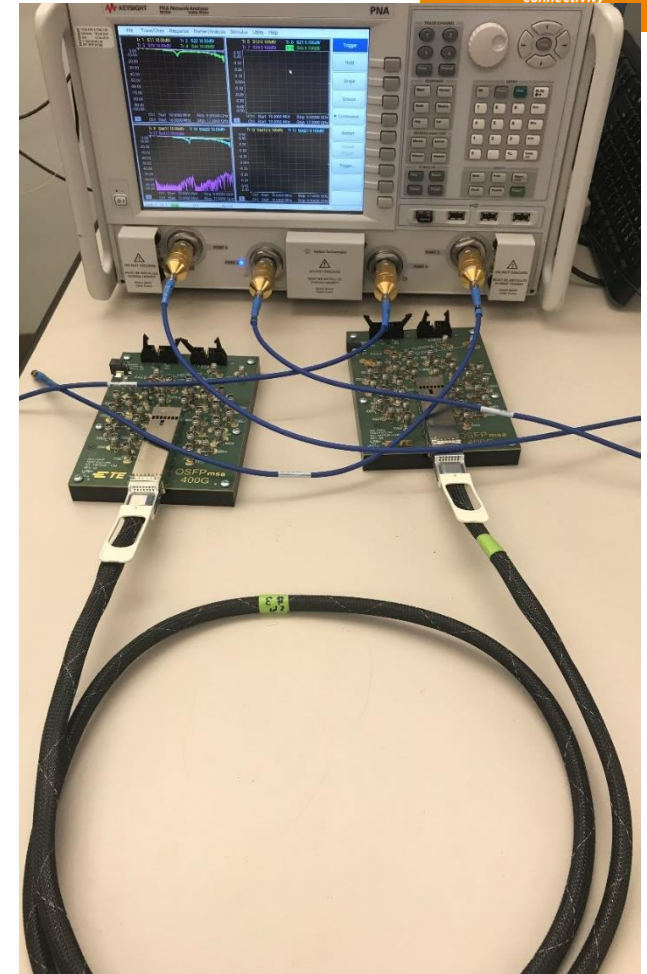
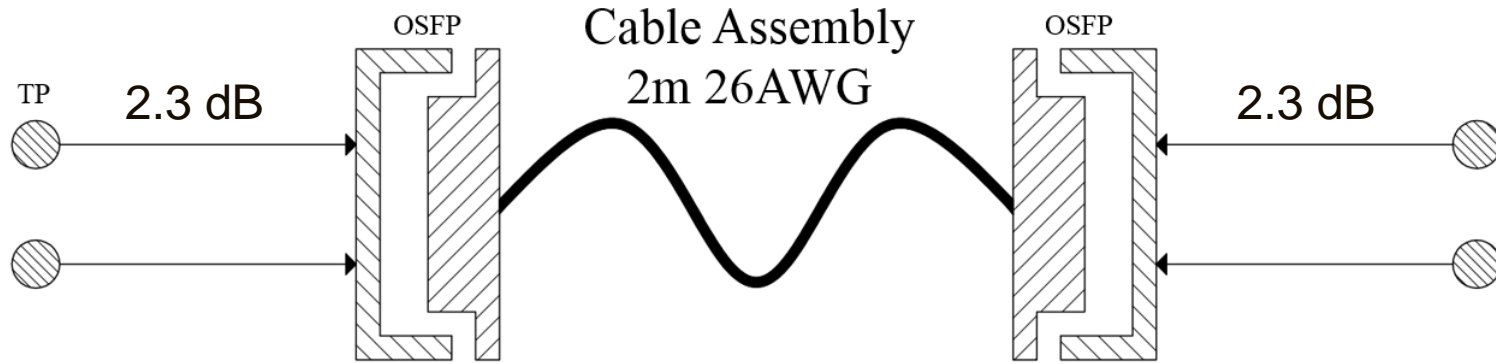
Overview

- Description of new work being shared
- ERL Results of copper cable measurements
- Summary

New Work Being Shared

- Various OSFP cable assemblies have been built
- Tested with prototype OSFP MCBs and connectors
- MCB trace loss is per the draft specification, 2.3 dB at 26.56 GHz
- ERL results were then analyzed

Test Set-up



OSFP Pin Map

Pin #	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
	G	Tx1+	Tx1-	G	Tx3+	Tx3-	G	Tx5+	Tx5-	G	Tx7+	Tx7-	G	SB	SB	SB	SB	G	Rx8-	Rx8+	G	Rx6-	Rx6+	G	Rx4-	Rx4+	G	Rx2-	Rx2+	G
	G	Tx2+	Tx2-	G	Tx4+	Tx4-	G	Tx6+	Tx6-	G	Tx8+	Tx8-	G	SB	SB	SB	SB	G	Rx7-	Rxy+	G	Rx5-	Rx5+	G	Rx3-	Rx3+	G	Rx1-	Rx1+	G
Pin #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

COM vs ERL using Varying Eta_0 Values

- Plot on right shows COM vs ERL for 110 channels
- Min ERL is 8.7
- A min ERL of 8 is recommended for specification to allow room to limit for other forms factors in addition to cable assembly and connector variation

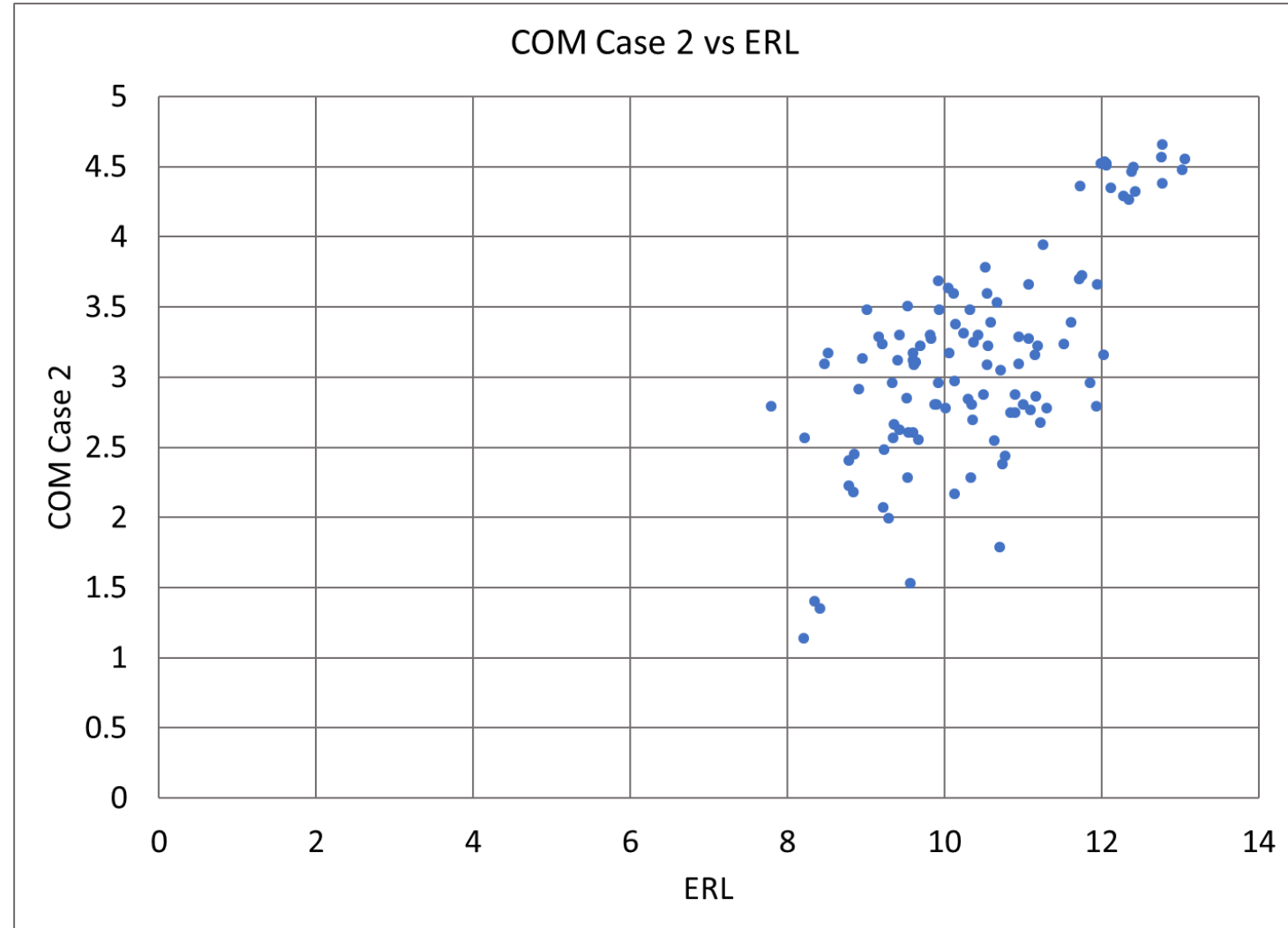


Table 93A-1 parameters				I/O control			Table 93A-3 parameters		
Parameter	Setting	Units	Information				Parameter	Setting	Units
f_b	53.125	GBd		DIAGNOSTICS	0	logical	package_tl_gamma0_a1_a2	[0 0.0009909 0.0002772]	
f_min	0.05	GHz		DISPLAY_WINDOW	0	logical	package_tl_tau	6.141E-03	ns/mm
Delta_f	0.01	GHz		CSV_REPORT	1	logical	package_Z_c	[87.5 87.5 ; 92.5 92.5]	Ohm
C_d	[1.2e-4 1.2e-4]	nF	[TX RX]	RESULT_DIR	.\results\100GEL_KR_{date}\		benarcsi_3ck_01_0119 & mellitz_3ck_01_0119		
L_s	[0.12, 0.12]	nH	[TX RX]	SAVE_FIGURES	0	logical	Table 92-12 parameters		
C_b	[0.3e-4 0.3e-4]	nF	[TX RX]	Port Order	[1 3 2 4]		Parameter	Setting	
z_p select	[2]		[test cases to run]	RUNTAG	KR_eval_		board_tl_gamma0_a1_a2	[0 3.8206e-04 9.5909e-05]	
z_p (TX)	[12 31; 1.8 1.8]	mm	[test cases]	COM_CONTRIBUTION	0	logical	board_tl_tau	5.790E-03	ns/mm
z_p (NEXT)	[12 29; 1.8 1.8]	mm	[test cases]	Operational			board_Z_c	100	Ohm
z_p (FEXT)	[12 31; 1.8 1.8]	mm	[test cases]	COM Pass threshold	3	dB	z_bp (TX)	110.3	mm
z_p (RX)	[12 29; 1.8 1.8]	mm	[test cases]	ERL Pass threshold	10.5	dB	z_bp (NEXT)	110.3	mm
C_p	[0.87e-4 0.87e-4]	nF	[TX RX]	DER_O	1.00E-04		z_bp (FEXT)	110.3	mm
R_O	50	Ohm		T_r	0.006160714	ns	z_bp (RX)	110.3	mm
R_d	[50 50]	Ohm	[TX RX]	FORCE_TR	1	logical	C_0	[0.29e-4]	nF
A_v	0.413	V		Local Search	2		C_1	[0.19e-4]	nF
A_fe	0.413	V		TDR and ERL options			Include PCB	1	logical
A_ne	0.608	V		TDR	1	logical	Floating Tap Control		
L	4			ERL	1	logical	N_bg	3	0 1 2 or 3 groups
M	32			ERL_ONLY	0	logical	N_bf	3	taps per group
filter and Eq				TR_TDR	0.01	ns	N_f	40	UI span for floating taps
f_r	0.75	*fb		N	7000		bmaxg	0.05	max DFE value for floating taps
c(0)	0.54		min	beta_x	0.0000E+00		B_float_RSS_MAX	0.02	rss tail tap limit
c(-1)	[-0.34:0.02:0]		[min:step:max]	rho_x	0.618		N_tail_start	25	(UI) start of tail taps limit
c(-2)	[0:0.02:0.12]		[min:step:max]	fixture delay time	[0.5e-9 0.5e-9]	port1 port2]	ICN parameters		
c(-3)	[-0.06:0.02: 0]		[min:step:max]	TDR_W_TXPKG	0		f_v	0.723	*Fb
c(1)	[-0.2:0.05:0]		[min:step:max]	N_bx	21	UI	f_f	0.723	*Fb
N_b	12	UI		Receiver testing			f_n	0.723	*Fb
b_max(1)	0.85			RX_CALIBRATION	0	logical	f_2	39.844	GHz
b_max(2..N_b)	[0.3 0.2*ones(1,10)]			Sigma BBN step	5.00E-03	V	A_ft	0.600	V
b_min(1)	-0.85			Noise, jitter			A_nt	0.600	V
b_min(2..N_b)	[-0.3 0.2*ones(1,10)]			sigma_RJ	0.01	UI	TBD in document under consideration		
g_DC	[-20:1:0]	dB	[min:step:max]	A_DD	0.02	UI	new		
f_z	21.25	GHz		eta_0	1.00E-08	V^2/GHz			
f_p1	21.25	GHz		SNR_TX	32.5	dB			
f_p2	53.125	GHz		R_LM	0.95				
g_DC_HP	[-6:1:0]		[min:step:max]						
f_HP_PZ	0.6640625	GHz							

Summary

- TP1 to TP4 OSFP cable assembly measured results have been presented
- Recommend ERL to be set to 8 dB in specification