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COM with CTLE/LFE/FFE optimized for typical Rd and Zc

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Background Thoughts

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- CTLE/LFE/FFE are all Linear Equalizers (LEs)
  - Described by a transfer function in frequency (S or Z) domain
  - DFE is a non-linear equalizer
- LEs are used for (material-induced) insertion loss
  - Such as skin effect, dielectric loss
  - DFE takes care of reflection
- Variation of Rd and Zc affects only reflection
  - Rd: Termination Resistance, Zc: Package Transmission Line Impedance
- Hence, it should be OK to optimize LEs for typical Rd and Zc
  - We can skip individual LE optimization for each variation of Rd and Zc

Definition

- TC1-TC32 : Test Condition 1-32
  - zp=12mm for TC1-16, zp=30mm for TC17-32
  - All 16 combinations of max/min values for Tx Rd, Tx Zc, Rx Rd, Rx Zc
- OC1, OC2 : Optimizing Condition 1 and 2
  - zp=12mm for OC1, zp=30mm for OC2
  - Only typical values for Tx Rd, Tx Zc, Rx Rd, Rx Zc
- LE parameters: Linear Equalizer (CTLE,LFE,FFE) parameters
  - $g_{DC}, g_{DC2}, c(-2), c(-1), c(1)$
- COM_A
  - COM calculated using LE parameters optimized for each of TC1-32
    - With conventional algorithm (slide 3)
- COM_B
  - COM calculated using LE parameters optimized for OC1 or OC2
    - With new algorithm (slide 4)
- COM_C
  - COM re-calculated for the worst condition (TC1-32, OC1-2) of COM_B after re-optimizing LE (proposal in slide 31)

Algorithm to Calculate COM_A

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1. For each of TC1-32, optimize LE parameters by
   A. Calculate FOM for all possible combinations of LE parameters
   B. Choose the LE parameters that maximize FOM
2. For each of TC1-32, calculate COM_A with the LE parameters chosen for the test condition

Actual calculation was done by an equivalent algorithm in a different order.

Algorithm to Calculate COM_B

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1. For each of OC1 and OC2, optimize LE parameters by
   A. Calculate FOM for all possible combinations of LE parameters
   B. Choose the LE parameters that maximize FOM
2. For each of TC1-32 and OC1-2, calculate COM_B with the LE parameters chosen for OC1 or OC2 that has the same zp as the test condition

Actual calculation was done by an equivalent algorithm in a different order.

Results for Typ Zc = 93Ω

- zp = 12mm (OC1, TC1-16) or 30mm (OC2, TC17-32)
- Rd = 50Ω (OC1-2), 45 or 55Ω (TC1-32)
- Z_c = 93Ω (OC1-2), 83.7 or 102.3Ω (TC1-32)
- A_v, A_fe = 0.415v (OC1-2), 0.394 or 0.436v (TC1-32)
- A_ne = 0.611v (OC1-2), 0.581 or 0.642v (TC1-32, selected by Tx Rd)

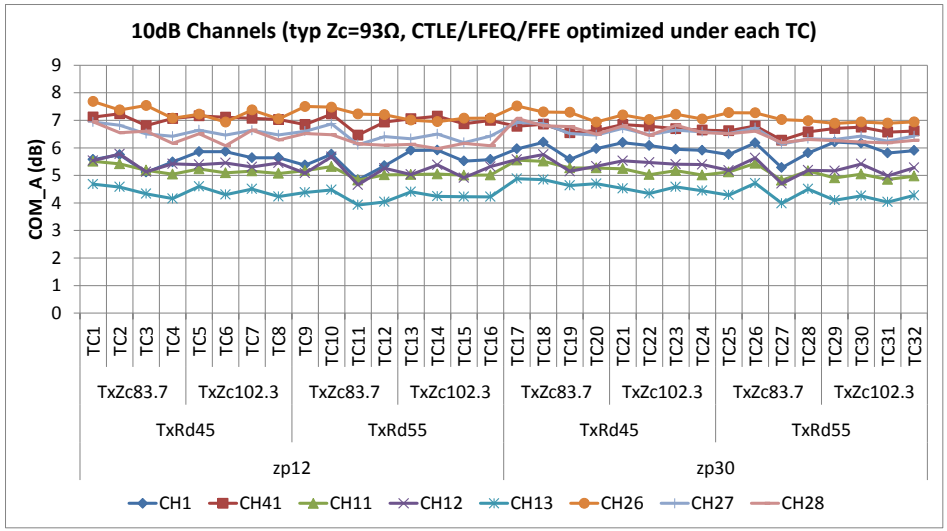
COM Parameters for typ Zc = 93Ω (012417)

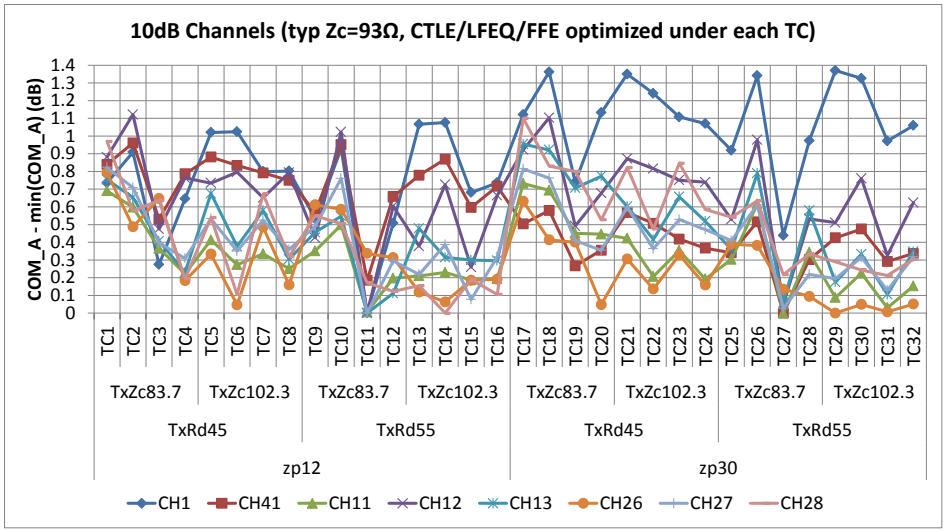
Condition #			TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	OC1
zp	Tx	Victim	12																
		FEXT	12																
		NEXT	12																
	Rx		12																
Rd	Tx (Victim, XT)		45								55								50
	Rx		45		55		45		55		45		55		45		55		50
Zc	Tx (Victim, XT)		83.7				102.3				83.7				102.3				93
	Rx		83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	93
Av			0.394								0.436								0.415
Afe			0.394								0.436								0.415
Ane			0.581								0.642								0.611

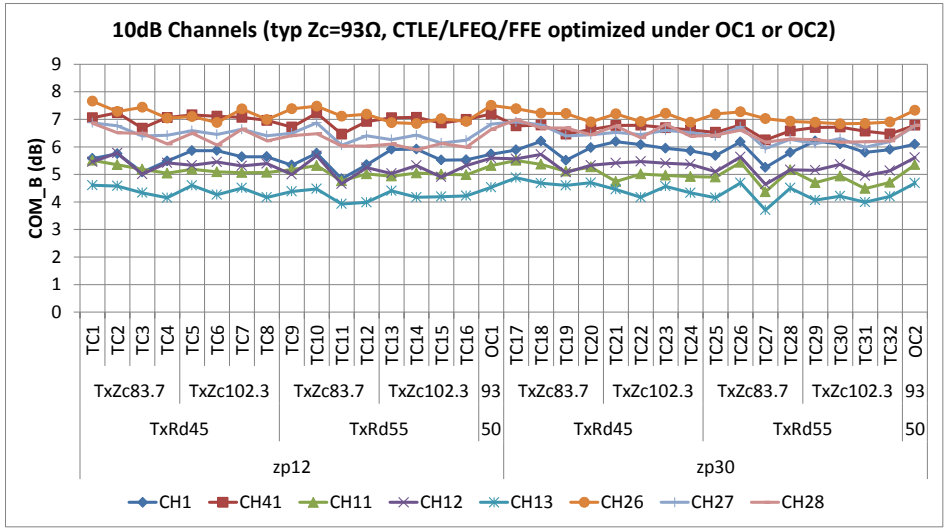
TC#			TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC2
zp	Tx	Victim	30																
		FEXT	30																
		NEXT	12																
	Rx		30																
Rd	Tx (Victim, XT)		45								55								50
	Rx		45		55		45		55		45		55		45		55		50
Zc	Tx (Victim, XT)		83.7				102.3				83.7				102.3				93
	Rx		83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	83.7	102.3	93
Av			0.394								0.436								0.415
Afe			0.394								0.436								0.415
Ane			0.581								0.642								0.611

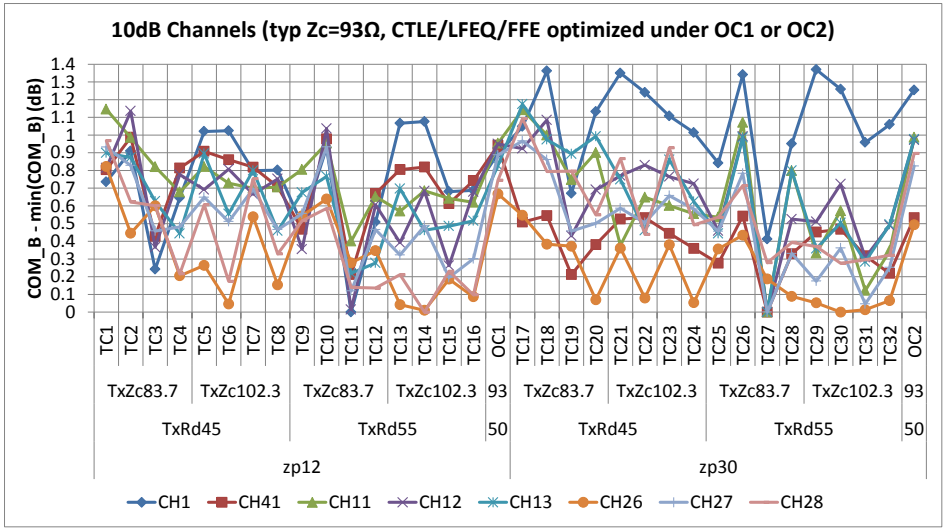
10dB Channels (typ Zc=93Ω)

- COM_B is similar to COM_A



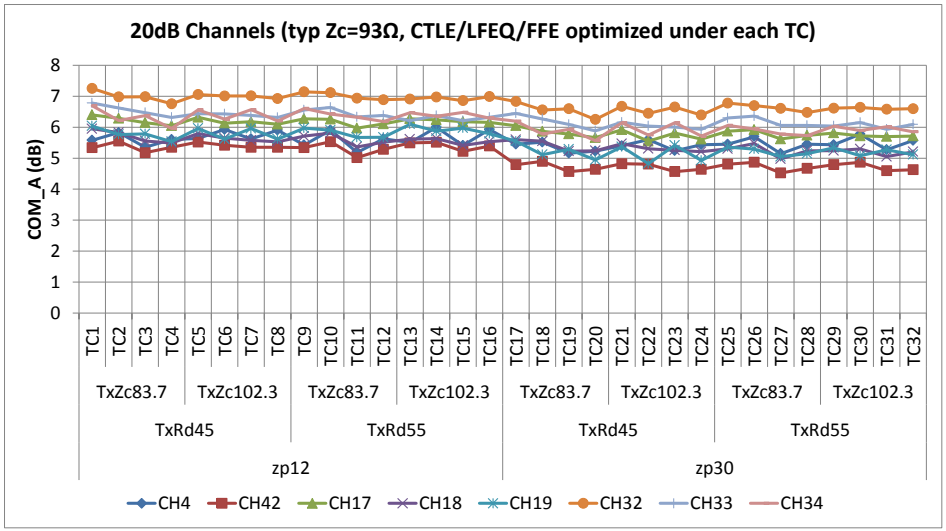


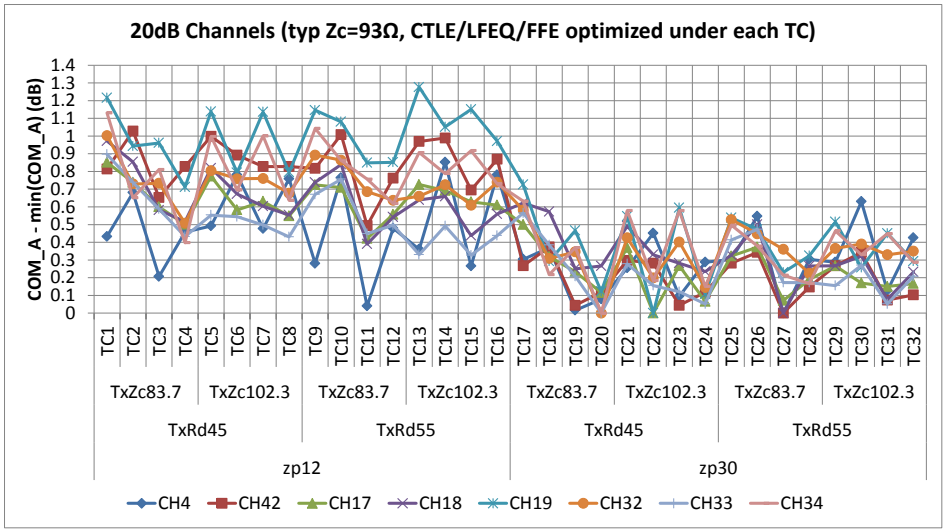


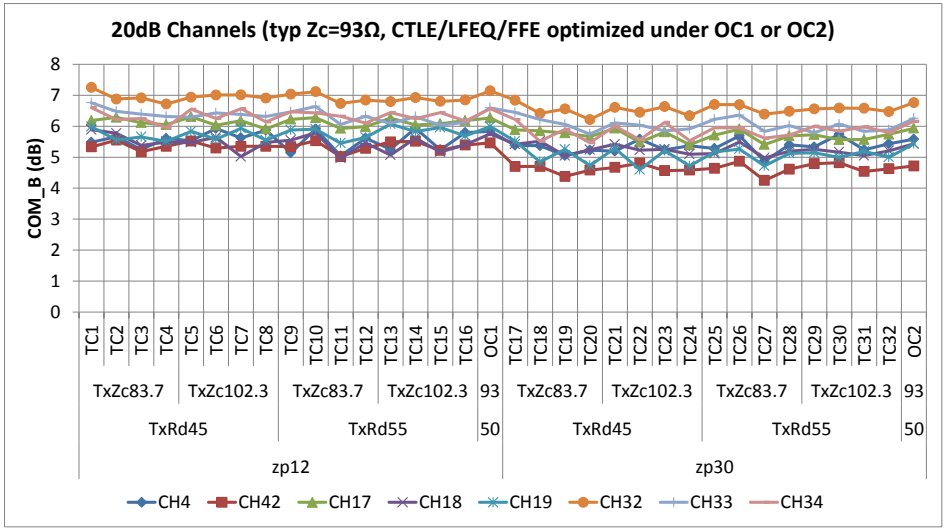


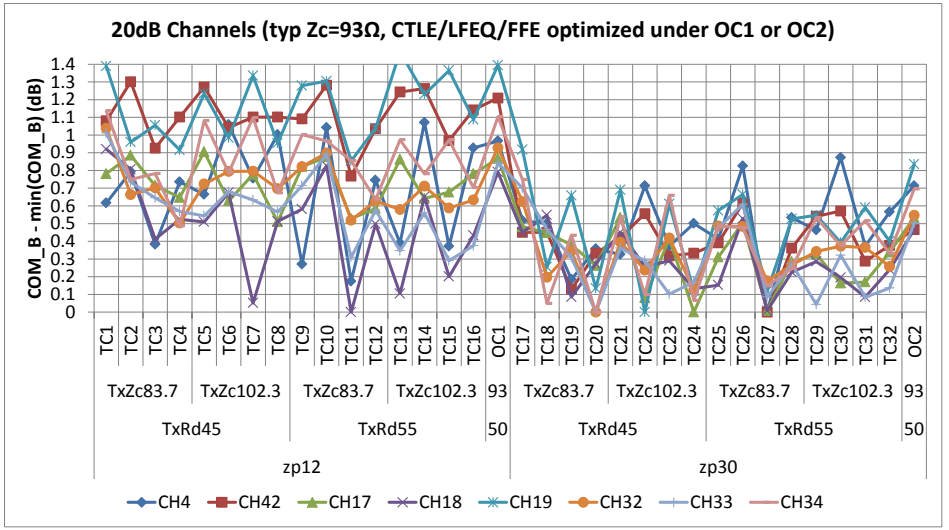
20dB Channels (typ Zc=93Ω)

- COM_B is similar to COM_A



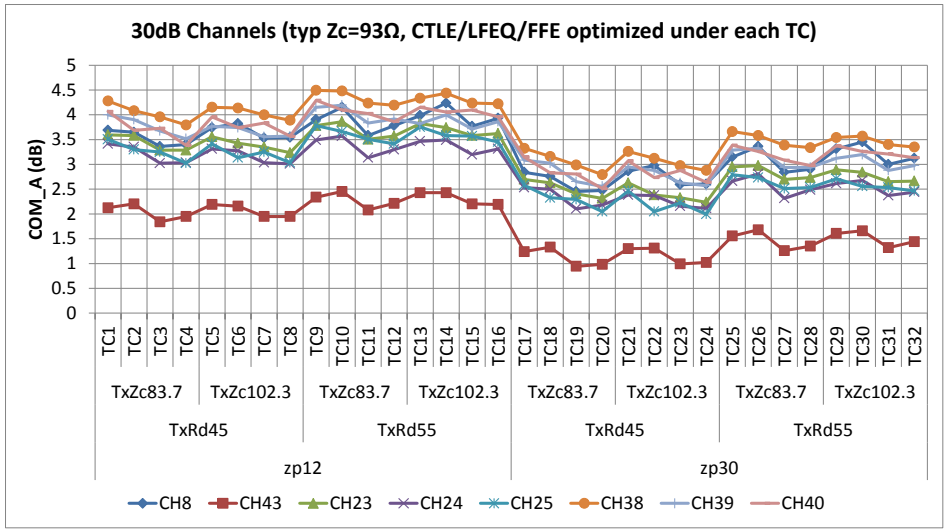


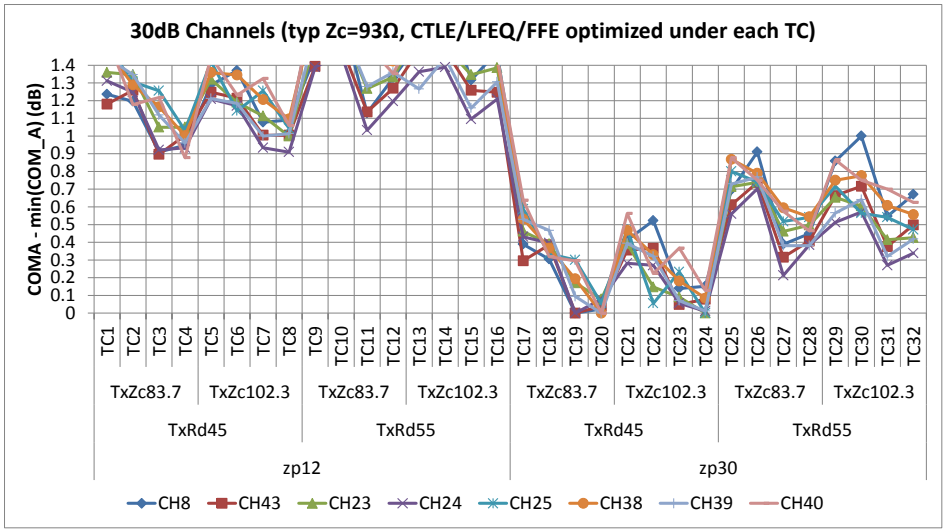


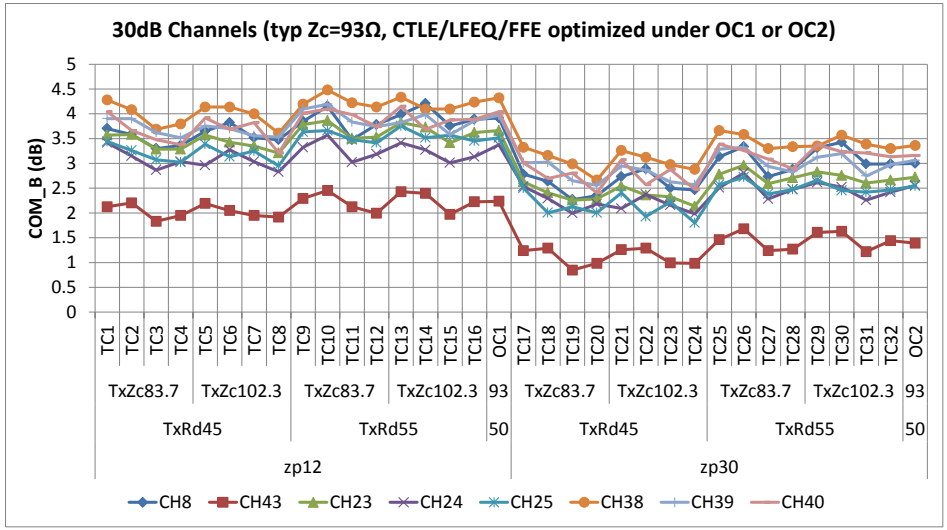


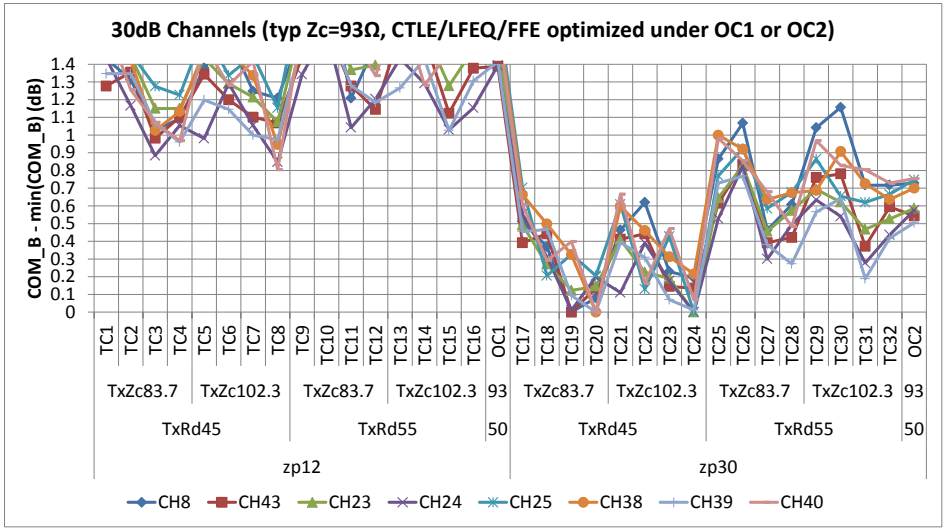
30dB Channels (typ Zc=93Ω)

- COM_B is similar to COM_A



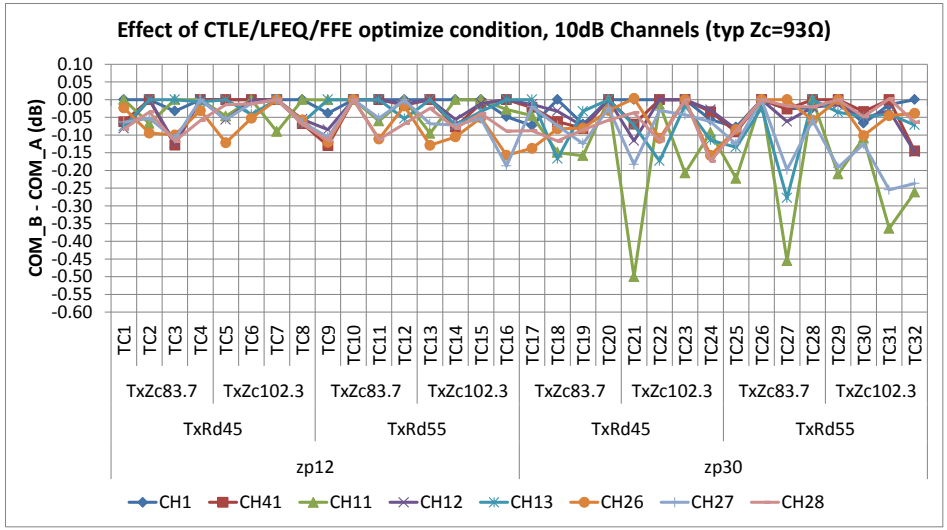


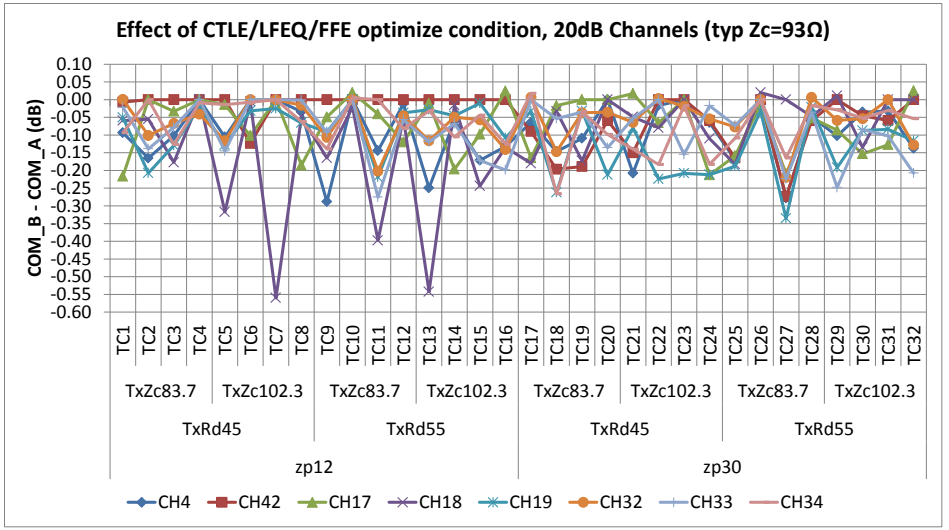


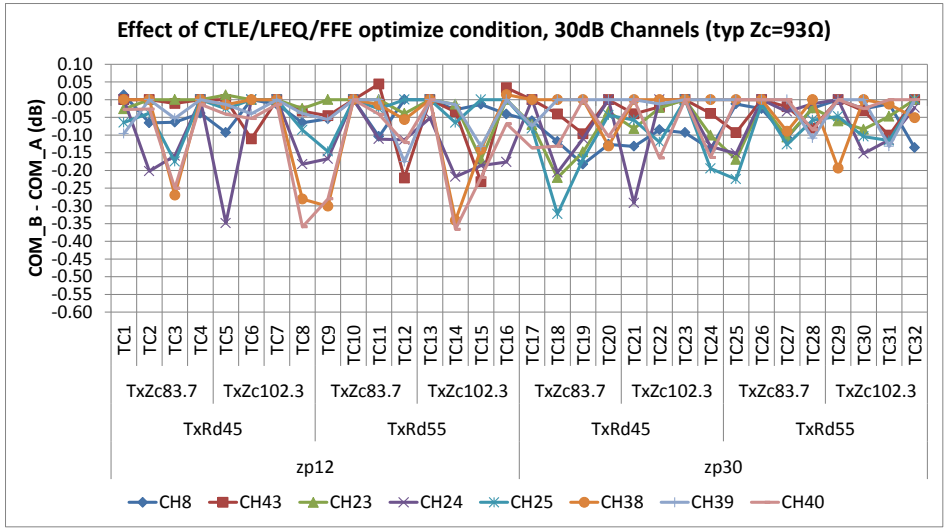


COM_A vs COM_B (typ Zc=93Ω)

- COM_B is worse than COM_A by up to 0.55dB







COM_A Values (typ Zc=93Ω) (010317)

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- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	TDR result (thru channel)	
		zp	12																30																	
		Tx Rd	45								55								45								55									
		Tx Zc	83.7				102.3				83.7				102.3				83.7				102.3				83.7				102.3					
		Av,Afe	0.394				0.394				0.436				0.436				0.394				0.394				0.436				0.436					
		Ane	0.581				0.581				0.642				0.642				0.581				0.581				0.642				0.642					
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55			
		Rx Zc	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	Z11	Z22
10dB	Cisco	CH1	5.58	5.75	5.11	5.49	5.86	5.86	5.64	5.64	5.37	5.77	4.84	5.35	5.91	5.92	5.52	5.58	5.96	6.20	5.58	5.97	6.19	6.08	5.95	5.91	5.76	6.18	5.28	5.81	6.21	6.17	5.81	5.90	94.79	98.92
	TE	CH41	7.12	7.24	6.81	7.07	7.16	7.11	7.07	7.03	6.85	7.23	6.46	6.94	7.06	7.15	6.88	6.99	6.78	6.86	6.55	6.63	6.85	6.79	6.70	6.65	6.62	6.79	6.28	6.58	6.70	6.75	6.57	6.62	97.25	96.54
	Intel 100Ω	CH11	5.51	5.42	5.19	5.04	5.23	5.09	5.16	5.07	5.17	5.32	4.83	5.02	5.03	5.05	5.01	5.01	5.55	5.51	5.27	5.27	5.24	5.03	5.17	5.01	5.12	5.44	4.82	5.16	4.91	5.05	4.85	4.97	99.25	97.11
		CH12	5.54	5.78	5.13	5.42	5.39	5.45	5.31	5.45	5.08	5.68	4.65	5.26	5.03	5.38	4.91	5.32	5.58	5.76	5.15	5.33	5.53	5.47	5.41	5.39	5.18	5.63	4.70	5.19	5.17	5.42	4.98	5.28	93.90	96.24
		CH13	4.68	4.58	4.33	4.16	4.60	4.30	4.51	4.23	4.38	4.47	3.93	4.04	4.40	4.24	4.22	4.22	4.88	4.85	4.63	4.70	4.53	4.34	4.58	4.44	4.28	4.72	3.98	4.51	4.10	4.26	4.03	4.27	104.24	97.89
	Intel 85Ω	CH26	7.68	7.38	7.54	7.07	7.22	6.94	7.38	7.05	7.50	7.48	7.23	7.20	7.01	6.95	7.08	7.08	7.52	7.30	7.29	6.94	7.20	7.03	7.22	7.05	7.28	7.27	7.02	6.99	6.89	6.94	6.90	6.94	87.58	87.37
		CH27	6.94	6.82	6.51	6.42	6.64	6.46	6.64	6.47	6.60	6.87	6.11	6.41	6.33	6.50	6.19	6.43	6.93	6.87	6.52	6.47	6.71	6.48	6.64	6.58	6.52	6.72	6.14	6.33	6.31	6.43	6.24	6.43	83.01	87.17
		CH28	6.94	6.55	6.61	6.17	6.51	6.08	6.64	6.29	6.52	6.48	6.14	6.09	6.13	5.97	6.16	6.08	7.07	6.80	6.77	6.50	6.79	6.45	6.82	6.56	6.51	6.61	6.19	6.31	6.26	6.22	6.18	6.28	92.08	87.58
20dB	Cisco	CH4	5.58	5.83	5.35	5.60	5.64	5.93	5.62	5.90	5.43	5.91	5.19	5.62	5.51	6.00	5.41	5.93	5.45	5.51	5.16	5.22	5.40	5.60	5.24	5.43	5.45	5.69	5.15	5.45	5.43	5.78	5.27	5.57	94.90	100.65
	TE	CH42	5.34	5.55	5.18	5.35	5.52	5.42	5.35	5.35	5.34	5.53	5.02	5.29	5.49	5.51	5.22	5.39	4.79	4.90	4.57	4.64	4.82	4.81	4.57	4.64	4.81	4.87	4.52	4.67	4.79	4.87	4.60	4.63	97.22	96.67
	Intel 100Ω	CH17	6.40	6.29	6.15	6.05	6.32	6.13	6.18	6.10	6.27	6.26	5.97	6.11	6.27	6.24	6.18	6.16	6.05	5.87	5.78	5.66	5.92	5.55	5.81	5.61	5.87	5.92	5.62	5.74	5.81	5.72	5.70	5.71	99.85	97.90
		CH18	5.95	5.83	5.56	5.49	5.79	5.65	5.58	5.53	5.71	5.81	5.36	5.52	5.61	5.63	5.41	5.53	5.60	5.55	5.22	5.24	5.47	5.30	5.26	5.21	5.30	5.47	4.97	5.24	5.24	5.30	5.05	5.21	93.17	94.83
		CH19	6.04	5.77	5.78	5.53	5.96	5.61	5.96	5.62	5.97	5.90	5.67	5.67	6.10	5.87	5.97	5.79	5.55	5.11	5.29	4.94	5.37	4.82	5.42	4.93	5.36	5.29	5.05	5.15	5.34	5.08	5.27	5.11	105.30	100.72
	Intel 85Ω	CH32	7.25	6.98	6.98	6.76	7.05	7.01	7.01	6.93	7.14	7.11	6.94	6.89	6.91	6.97	6.86	6.99	6.83	6.56	6.60	6.25	6.67	6.45	6.65	6.39	6.78	6.70	6.61	6.47	6.61	6.64	6.58	6.60	86.32	85.76
		CH33	6.78	6.62	6.47	6.32	6.44	6.43	6.38	6.31	6.55	6.64	6.33	6.38	6.21	6.37	6.21	6.32	6.45	6.27	6.09	5.88	6.16	6.04	6.00	5.93	6.30	6.36	6.06	6.06	6.04	6.15	5.93	6.09	81.38	83.65
		CH34	6.69	6.21	6.38	5.96	6.56	6.26	6.56	6.20	6.61	6.43	6.32	6.18	6.47	6.35	6.48	6.29	6.20	5.78	5.93	5.56	6.14	5.75	6.14	5.71	6.06	5.94	5.78	5.73	6.03	5.89	6.01	5.85	91.98	88.30
30dB	Cisco	CH8	3.69	3.65	3.36	3.40	3.74	3.82	3.53	3.54	3.90	4.15	3.58	3.78	3.99	4.24	3.77	3.93	2.84	2.76	2.45	2.48	2.87	2.97	2.59	2.60	3.15	3.36	2.84	2.90	3.31	3.45	3.00	3.12	96.34	100.63
	TE	CH43	2.12	2.20	1.84	1.95	2.19	2.16	1.95	1.95	2.34	2.45	2.08	2.21	2.43	2.43	2.20	2.19	1.24	1.33	0.94	0.98	1.30	1.31	0.99	1.02	1.56	1.68	1.26	1.35	1.61	1.66	1.32	1.44	97.23	96.65
	Intel 100Ω	CH23	3.60	3.58	3.29	3.29	3.56	3.43	3.35	3.24	3.78	3.86	3.50	3.57	3.82	3.74	3.58	3.62	2.70	2.63	2.41	2.32	2.63	2.38	2.33	2.24	2.95	2.97	2.70	2.73	2.89	2.84	2.65	2.66	99.97	97.29
		CH24	3.41	3.35	3.02	3.04	3.31	3.27	3.04	3.01	3.49	3.57	3.14	3.30	3.47	3.49	3.20	3.31	2.53	2.50	2.10	2.18	2.38	2.37	2.16	2.11	2.66	2.81	2.32	2.49	2.62	2.67	2.37	2.44	92.81	94.69
		CH25	3.50	3.30	3.25	3.02	3.41	3.14	3.25	3.04	3.78	3.66	3.50	3.41	3.76	3.58	3.57	3.45	2.58	2.33	2.29	2.05	2.46	2.05	2.23	1.99	2.79	2.73	2.51	2.53	2.71	2.56	2.53	2.46	105.33	100.56
	Intel 85Ω	CH38	4.28	4.08	3.96	3.80	4.15	4.14	4.00	3.89	4.50	4.48	4.24	4.19	4.34	4.44	4.24	4.22	3.32	3.16	2.99	2.79	3.26	3.12	2.97	2.88	3.66	3.58	3.39	3.34	3.54	3.57	3.40	3.35	86.79	86.56
		CH39	4.00	3.90	3.68	3.52	3.77	3.74	3.56	3.57	4.15	4.19	3.84	3.92	3.82	4.00	3.72	3.86	3.09	3.02	2.65	2.56	2.95	2.88	2.63	2.57	3.29	3.32	2.94	2.94	3.12	3.20	2.88	2.97	82.63	85.39
		CH40	4.07	3.69	3.73	3.39	3.96	3.74	3.84	3.57	4.29	4.10	4.03	3.86	4.15	4.05	4.10	3.96	3.15	2.83	2.81	2.51	3.07	2.73	2.88	2.64	3.39	3.26	3.09	2.97	3.38	3.26	3.21	3.14	91.73	88.19

ΔCOM_A Values (typ Zc=93Ω) (010317)

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- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	TDR result (thru channel)	
		zp	12																30																	
		Tx Rd	45								55								45								55									
		Tx Zc	83.7				102.3				83.7				102.3				83.7				102.3				83.7				102.3					
		Av,Afe	0.388				0.388				0.429				0.429				0.399				0.396				0.444				0.439					
		Ane	0.569				0.563				0.629				0.620				0.569				0.563				0.629				0.620					
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55			
		Rx Zc	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	Z11	Z22
10dB	Cisco	CH1	0.74	0.91	0.27	0.65	1.02	1.02	0.80	0.80	0.53	0.93	0.00	0.51	1.07	1.08	0.68	0.74	1.12	1.36	0.74	1.13	1.35	1.24	1.11	1.07	0.92	1.34	0.44	0.97	1.37	1.33	0.97	1.06	94.79	98.92
	TE	CH41	0.84	0.96	0.53	0.79	0.88	0.83	0.79	0.75	0.57	0.95	0.18	0.66	0.78	0.87	0.60	0.72	0.50	0.58	0.27	0.35	0.57	0.51	0.42	0.37	0.34	0.52	0.00	0.30	0.43	0.47	0.29	0.34	97.25	96.54
	Intel 100Ω	CH11	0.69	0.60	0.37	0.22	0.41	0.27	0.33	0.25	0.35	0.50	0.01	0.20	0.21	0.23	0.19	0.19	0.73	0.69	0.45	0.45	0.42	0.21	0.35	0.19	0.30	0.62	0.00	0.34	0.09	0.22	0.03	0.15	99.25	97.11
		CH12	0.88	1.12	0.47	0.76	0.73	0.80	0.65	0.79	0.43	1.02	0.00	0.60	0.38	0.73	0.26	0.66	0.92	1.10	0.49	0.68	0.87	0.82	0.75	0.74	0.53	0.98	0.05	0.53	0.51	0.76	0.33	0.62	93.90	96.24
		CH13	0.75	0.65	0.41	0.23	0.68	0.38	0.58	0.30	0.46	0.55	0.00	0.11	0.48	0.31	0.30	0.30	0.95	0.92	0.71	0.77	0.60	0.42	0.66	0.52	0.36	0.79	0.06	0.58	0.17	0.33	0.11	0.35	104.24	97.89
	Intel 85Ω	CH26	0.79	0.49	0.65	0.18	0.33	0.05	0.49	0.16	0.61	0.59	0.34	0.31	0.12	0.06	0.19	0.19	0.63	0.41	0.40	0.05	0.31	0.14	0.33	0.16	0.39	0.38	0.13	0.09	0.00	0.05	0.01	0.05	87.58	87.37
		CH27	0.82	0.71	0.40	0.31	0.53	0.35	0.52	0.36	0.49	0.76	0.00	0.30	0.22	0.39	0.08	0.32	0.81	0.76	0.41	0.35	0.60	0.36	0.53	0.47	0.41	0.61	0.03	0.22	0.19	0.32	0.13	0.32	83.01	87.17
		CH28	0.97	0.58	0.64	0.19	0.54	0.11	0.67	0.32	0.55	0.50	0.17	0.12	0.16	0.00	0.19	0.11	1.10	0.83	0.80	0.53	0.82	0.47	0.85	0.59	0.54	0.63	0.22	0.33	0.29	0.24	0.21	0.30	92.08	87.58
20dB	Cisco	CH4	0.43	0.68	0.21	0.46	0.49	0.78	0.48	0.76	0.28	0.76	0.04	0.48	0.36	0.85	0.27	0.78	0.30	0.37	0.02	0.08	0.26	0.45	0.09	0.29	0.30	0.55	0.00	0.30	0.29	0.63	0.13	0.42	94.90	100.65
	TE	CH42	0.81	1.03	0.65	0.83	1.00	0.89	0.83	0.83	0.82	1.01	0.49	0.76	0.97	0.99	0.70	0.87	0.27	0.37	0.04	0.12	0.30	0.28	0.04	0.12	0.28	0.34	0.00	0.15	0.27	0.34	0.07	0.10	97.22	96.67
	Intel 100Ω	CH17	0.85	0.74	0.60	0.50	0.77	0.58	0.63	0.55	0.72	0.71	0.42	0.56	0.73	0.69	0.63	0.61	0.50	0.32	0.23	0.12	0.37	0.00	0.27	0.07	0.32	0.37	0.07	0.19	0.27	0.17	0.15	0.17	99.85	97.90
		CH18	0.97	0.85	0.58	0.52	0.82	0.67	0.60	0.55	0.74	0.84	0.39	0.54	0.64	0.66	0.44	0.56	0.62	0.57	0.25	0.27	0.49	0.33	0.28	0.23	0.33	0.50	0.00	0.27	0.27	0.32	0.08	0.23	93.17	94.83
		CH19	1.22	0.94	0.96	0.71	1.14	0.79	1.14	0.80	1.15	1.08	0.85	0.85	1.28	1.05	1.15	0.97	0.73	0.29	0.47	0.12	0.55	0.00	0.59	0.11	0.54	0.47	0.23	0.32	0.52	0.26	0.45	0.29	105.30	100.72
	Intel 85Ω	CH32	1.00	0.73	0.73	0.51	0.80	0.76	0.76	0.68	0.89	0.86	0.69	0.64	0.66	0.72	0.61	0.74	0.58	0.31	0.35	0.00	0.42	0.20	0.40	0.14	0.53	0.45	0.36	0.22	0.37	0.39	0.33	0.35	86.32	85.76
		CH33	0.90	0.74	0.59	0.43	0.55	0.54	0.50	0.43	0.67	0.76	0.45	0.50	0.33	0.49	0.33	0.44	0.57	0.38	0.21	0.00	0.28	0.16	0.12	0.05	0.41	0.47	0.17	0.17	0.16	0.27	0.05	0.21	81.38	83.65
		CH34	1.13	0.65	0.81	0.40	1.00	0.70	1.00	0.64	1.04	0.86	0.76	0.62	0.91	0.79	0.92	0.73	0.63	0.22	0.37	0.00	0.58	0.18	0.58	0.15	0.50	0.38	0.21	0.17	0.46	0.33	0.45	0.29	91.98	88.30
30dB	Cisco	CH8	1.24	1.20	0.91	0.95	1.29	1.37	1.08	1.09	1.45	1.70	1.13	1.33	1.53	1.78	1.32	1.48	0.39	0.30	0.00	0.02	0.41	0.52	0.14	0.15	0.70	0.91	0.39	0.45	0.86	1.00	0.55	0.67	96.34	100.63
	TE	CH43	1.18	1.26	0.90	1.00	1.25	1.21	1.00	1.00	1.39	1.51	1.14	1.27	1.49	1.49	1.26	1.25	0.30	0.39	0.00	0.04	0.36	0.37	0.05	0.08	0.61	0.74	0.32	0.41	0.66	0.72	0.38	0.50	97.23	96.65
	Intel 100Ω	CH23	1.36	1.35	1.05	1.05	1.32	1.19	1.11	1.00	1.55	1.63	1.27	1.33	1.59	1.51	1.35	1.39	0.46	0.39	0.17	0.08	0.39	0.15	0.09	0.00	0.71	0.74	0.46	0.50	0.65	0.60	0.41	0.43	99.97	97.29
		CH24	1.31	1.25	0.92	0.93	1.21	1.17	0.93	0.91	1.39	1.47	1.03	1.20	1.36	1.39	1.10	1.21	0.43	0.40	0.00	0.08	0.28	0.27	0.06	0.01	0.56	0.70	0.21	0.38	0.51	0.57	0.27	0.34	92.81	94.69
		CH25	1.51	1.31	1.26	1.03	1.42	1.14	1.26	1.04	1.79	1.67	1.51	1.42	1.76	1.59	1.58	1.46	0.59	0.33	0.30	0.05	0.47	0.05	0.23	0.00	0.80	0.74	0.52	0.54	0.72	0.56	0.54	0.47	105.33	100.56
	Intel 85Ω	CH38	1.49	1.29	1.16	1.00	1.36	1.34	1.21	1.10	1.70	1.69	1.44	1.40	1.54	1.64	1.44	1.43	0.53	0.37	0.19	0.00	0.47	0.33	0.18	0.08	0.87	0.79	0.59	0.54	0.75	0.78	0.61	0.56	86.79	86.56
		CH39	1.44	1.35	1.12	0.96	1.21	1.18	1.00	1.01	1.60	1.64	1.28	1.36	1.27	1.44	1.16	1.31	0.53	0.47	0.09	0.00	0.39	0.32	0.07	0.01	0.73	0.77	0.38	0.38	0.57	0.64	0.32	0.42	82.63	85.39
		CH40	1.56	1.18	1.22	0.88	1.45	1.23	1.33	1.06	1.78	1.59	1.52	1.35	1.64	1.54	1.59	1.45	0.64	0.32	0.29	0.00	0.56	0.22	0.37	0.13	0.88	0.75	0.58	0.46	0.87	0.75	0.70	0.62	91.73	88.19

- ΔCOM_A = COM_A minus the worst COM_A in the 32 Test Cases for the same channel.

COM_B Values (typ Zc=93Ω) (013117)

FUJITSU

- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC1	OC2
		zp	12																30																12	30
		Tx Rd	45								55								45								55								50	
		Tx Zc	83.7				102.3				83.7				102.3				83.7				102.3				83.7				102.3				93	
		Av,Afe	0.394								0.436								0.394								0.436								0.415	
		Ane	0.581								0.642								0.581								0.642								0.611	
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55		50	
		Rx Zc	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	93	
10dB	Cisco	CH1	5.58	5.75	5.08	5.49	5.86	5.86	5.64	5.64	5.33	5.77	4.84	5.35	5.91	5.92	5.52	5.53	5.89	6.20	5.51	5.97	6.19	6.08	5.95	5.85	5.68	6.18	5.25	5.79	6.21	6.10	5.80	5.90	5.73	6.09
	TE	CH41	7.06	7.24	6.68	7.07	7.16	7.11	7.07	6.96	6.72	7.23	6.46	6.92	7.06	7.07	6.86	6.99	6.76	6.80	6.46	6.63	6.78	6.79	6.70	6.61	6.53	6.79	6.25	6.58	6.70	6.72	6.57	6.47	7.19	6.79
	Intel 100Ω	CH11	5.51	5.35	5.19	5.04	5.19	5.09	5.06	5.07	5.17	5.32	4.77	5.02	4.93	5.05	5.01	4.99	5.51	5.36	5.11	5.27	4.74	5.01	4.97	4.92	4.90	5.44	4.37	5.16	4.70	4.94	4.49	4.71	5.32	5.35
		CH12	5.45	5.78	5.01	5.42	5.33	5.45	5.31	5.39	5.00	5.68	4.65	5.25	5.03	5.32	4.90	5.32	5.56	5.73	5.07	5.33	5.41	5.47	5.41	5.37	5.10	5.63	4.64	5.17	5.15	5.36	4.95	5.13	5.59	5.61
		CH13	4.61	4.58	4.33	4.15	4.60	4.26	4.51	4.17	4.38	4.47	3.93	3.98	4.40	4.17	4.19	4.22	4.88	4.68	4.60	4.70	4.45	4.17	4.57	4.33	4.15	4.69	3.71	4.51	4.06	4.21	3.99	4.20	4.53	4.68
	Intel 85Ω	CH26	7.66	7.28	7.44	7.04	7.10	6.88	7.38	6.99	7.38	7.48	7.12	7.19	6.88	6.85	7.02	6.92	7.38	7.22	7.21	6.91	7.20	6.92	7.22	6.89	7.19	7.27	7.02	6.93	6.89	6.84	6.85	6.90	7.51	7.33
		CH27	6.87	6.77	6.40	6.42	6.59	6.45	6.64	6.41	6.50	6.87	6.06	6.41	6.26	6.43	6.14	6.24	6.91	6.80	6.40	6.44	6.53	6.44	6.60	6.52	6.40	6.72	5.94	6.27	6.11	6.30	5.99	6.19	6.83	6.76
		CH28	6.86	6.51	6.49	6.11	6.50	6.07	6.64	6.22	6.41	6.48	6.03	6.03	6.10	5.89	6.12	5.99	6.98	6.69	6.69	6.44	6.76	6.33	6.82	6.38	6.43	6.61	6.17	6.29	6.26	6.17	6.19	6.21	6.64	6.79
20dB	Cisco	CH4	5.48	5.66	5.25	5.60	5.53	5.93	5.62	5.87	5.14	5.91	5.04	5.61	5.26	5.94	5.24	5.79	5.38	5.37	5.05	5.22	5.19	5.58	5.24	5.37	5.28	5.69	4.87	5.40	5.33	5.74	5.24	5.43	5.83	5.58
	TE	CH42	5.33	5.55	5.18	5.35	5.52	5.29	5.35	5.35	5.34	5.53	5.02	5.29	5.49	5.51	5.22	5.39	4.70	4.70	4.38	4.58	4.67	4.81	4.57	4.58	4.64	4.87	4.25	4.61	4.79	4.82	4.54	4.63	5.46	4.72
	Intel 100Ω	CH17	6.18	6.29	6.11	6.05	6.31	6.03	6.18	5.91	6.22	6.28	5.93	5.99	6.26	6.04	6.08	6.18	5.88	5.85	5.78	5.66	5.93	5.48	5.81	5.40	5.71	5.91	5.41	5.69	5.73	5.56	5.57	5.74	6.27	5.93
		CH18	5.89	5.77	5.38	5.49	5.48	5.64	5.02	5.48	5.55	5.79	4.97	5.46	5.07	5.62	5.17	5.40	5.42	5.51	5.05	5.24	5.42	5.22	5.26	5.10	5.12	5.49	4.97	5.19	5.25	5.16	5.05	5.21	5.76	5.43
		CH19	5.99	5.56	5.65	5.51	5.83	5.58	5.93	5.55	5.88	5.90	5.45	5.64	6.07	5.83	5.96	5.69	5.51	4.85	5.26	4.73	5.29	4.60	5.21	4.72	5.17	5.26	4.72	5.12	5.15	4.99	5.19	5.00	5.99	5.43
	Intel 85Ω	CH32	7.25	6.88	6.92	6.72	6.94	7.01	7.01	6.91	7.04	7.11	6.73	6.84	6.79	6.92	6.80	6.85	6.84	6.41	6.56	6.21	6.61	6.45	6.63	6.34	6.70	6.70	6.39	6.48	6.56	6.59	6.58	6.47	7.14	6.76
		CH33	6.76	6.48	6.39	6.32	6.29	6.43	6.38	6.31	6.46	6.64	6.06	6.32	6.09	6.31	6.04	6.12	6.45	6.21	6.06	5.75	6.11	6.04	5.85	5.92	6.22	6.36	5.83	6.02	5.79	6.07	5.83	5.88	6.59	6.25
		CH34	6.60	6.21	6.25	5.95	6.55	6.25	6.56	6.14	6.47	6.43	6.32	6.10	6.44	6.25	6.44	6.17	6.21	5.51	5.90	5.47	6.00	5.56	6.13	5.53	5.95	5.94	5.61	5.71	6.00	5.84	5.98	5.80	6.57	6.16
30dB	Cisco	CH8	3.70	3.58	3.30	3.36	3.65	3.82	3.52	3.48	3.85	4.15	3.48	3.78	3.99	4.21	3.76	3.89	2.78	2.64	2.27	2.35	2.73	2.89	2.50	2.46	3.14	3.34	2.73	2.88	3.31	3.43	2.99	2.99	3.92	3.00
	TE	CH43	2.12	2.20	1.83	1.95	2.19	2.05	1.95	1.92	2.29	2.45	2.12	1.99	2.43	2.40	1.97	2.23	1.24	1.29	0.85	0.98	1.26	1.29	0.99	0.98	1.46	1.68	1.24	1.27	1.61	1.63	1.22	1.44	2.24	1.39
	Intel 100Ω	CH23	3.57	3.58	3.29	3.29	3.57	3.43	3.35	3.21	3.78	3.86	3.50	3.53	3.82	3.73	3.41	3.62	2.63	2.41	2.26	2.28	2.55	2.36	2.33	2.14	2.78	2.96	2.59	2.71	2.83	2.76	2.60	2.66	3.66	2.72
		CH24	3.41	3.15	2.87	3.04	2.96	3.27	3.04	2.83	3.32	3.57	3.02	3.19	3.41	3.27	3.01	3.14	2.53	2.29	1.99	2.18	2.09	2.37	2.16	1.98	2.51	2.81	2.28	2.48	2.62	2.52	2.26	2.42	3.38	2.56
		CH25	3.44	3.26	3.07	3.02	3.39	3.14	3.25	2.95	3.64	3.66	3.48	3.41	3.76	3.52	3.57	3.45	2.50	2.00	2.12	2.00	2.41	1.93	2.23	1.80	2.57	2.72	2.38	2.48	2.66	2.45	2.42	2.46	3.52	2.55
	Intel 85Ω	CH38	4.28	4.08	3.69	3.80	4.14	4.14	4.00	3.61	4.19	4.48	4.22	4.14	4.34	4.10	4.10	4.24	3.32	3.16	2.99	2.66	3.26	3.12	2.97	2.88	3.66	3.58	3.30	3.34	3.35	3.57	3.39	3.30	4.32	3.36
		CH39	3.90	3.90	3.62	3.52	3.76	3.70	3.56	3.53	4.10	4.19	3.84	3.74	3.82	3.99	3.58	3.86	3.01	3.02	2.65	2.56	2.95	2.87	2.63	2.57	3.29	3.32	2.94	2.83	3.12	3.20	2.75	2.97	3.97	3.06
		CH40	4.04	3.66	3.48	3.38	3.92	3.69	3.82	3.21	4.01	4.10	3.99	3.74	4.15	3.69	3.88	3.89	3.01	2.70	2.81	2.41	3.07	2.57	2.88	2.48	3.39	3.26	3.09	2.89	3.38	3.24	3.21	3.14	4.04	3.16

ΔCOM_B Values (typ Zc=93Ω) (013117)

FUJITSU

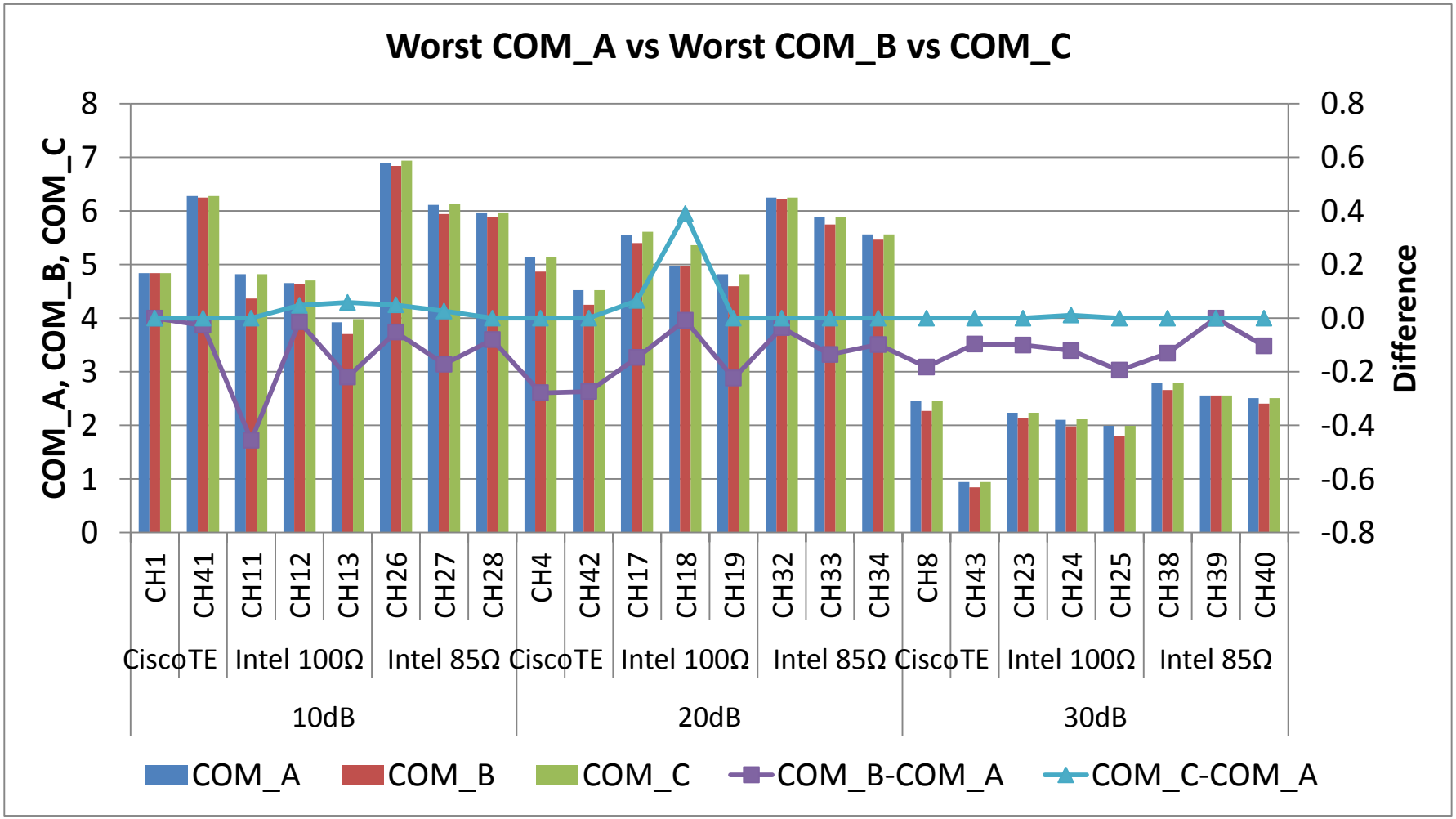
- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC1	OC2
		zp	12																30																12	30
		Tx Rd	45								55								45								55								50	
		Tx Zc	83.7				102.3				83.7				102.3				83.7				102.3				83.7				102.3				93	
		Av,Afe	0.394								0.436								0.394								0.436								0.415	
		Ane	0.581								0.642								0.581								0.642								0.611	
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55		50	
		Rx Zc	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	83.7	102	93	
10dB	Cisco	CH1	0.74	0.91	0.24	0.65	1.02	1.02	0.80	0.80	0.49	0.93	0.00	0.51	1.07	1.08	0.68	0.69	1.05	1.36	0.67	1.13	1.35	1.24	1.11	1.01	0.84	1.34	0.41	0.95	1.37	1.26	0.96	1.06	0.89	1.25
	TE	CH41	0.80	0.99	0.43	0.81	0.91	0.86	0.82	0.71	0.47	0.98	0.21	0.67	0.81	0.82	0.61	0.74	0.51	0.54	0.21	0.38	0.53	0.53	0.44	0.36	0.28	0.54	0.00	0.33	0.45	0.47	0.32	0.22	0.94	0.53
	Intel 100Ω	CH11	1.15	0.99	0.82	0.68	0.82	0.73	0.70	0.71	0.81	0.95	0.40	0.65	0.57	0.68	0.64	0.62	1.14	1.00	0.75	0.90	0.38	0.65	0.60	0.56	0.54	1.07	0.00	0.80	0.33	0.57	0.12	0.35	0.95	0.99
		CH12	0.81	1.14	0.37	0.78	0.69	0.81	0.67	0.75	0.35	1.04	0.01	0.61	0.39	0.68	0.26	0.68	0.92	1.08	0.43	0.69	0.77	0.83	0.76	0.72	0.46	0.99	0.00	0.53	0.51	0.72	0.31	0.49	0.95	0.97
		CH13	0.90	0.87	0.63	0.44	0.89	0.55	0.80	0.46	0.68	0.77	0.22	0.28	0.70	0.46	0.49	0.52	1.17	0.97	0.89	0.99	0.75	0.46	0.86	0.62	0.44	0.99	0.00	0.80	0.36	0.50	0.28	0.50	0.83	0.98
	Intel 85Ω	CH26	0.82	0.45	0.60	0.21	0.26	0.05	0.54	0.15	0.54	0.64	0.28	0.35	0.04	0.01	0.19	0.09	0.55	0.38	0.37	0.07	0.36	0.08	0.38	0.05	0.36	0.43	0.19	0.09	0.05	0.00	0.01	0.06	0.67	0.49
		CH27	0.93	0.83	0.46	0.48	0.65	0.51	0.70	0.47	0.56	0.93	0.12	0.47	0.32	0.49	0.20	0.30	0.97	0.86	0.46	0.50	0.59	0.50	0.66	0.58	0.46	0.78	0.00	0.33	0.17	0.36	0.05	0.25	0.89	0.82
		CH28	0.97	0.62	0.60	0.22	0.61	0.17	0.75	0.33	0.52	0.59	0.14	0.14	0.21	0.00	0.23	0.10	1.09	0.79	0.80	0.55	0.87	0.44	0.93	0.49	0.54	0.71	0.28	0.39	0.37	0.28	0.30	0.32	0.74	0.90
20dB	Cisco	CH4	0.62	0.79	0.38	0.74	0.66	1.06	0.76	1.00	0.27	1.04	0.17	0.75	0.39	1.07	0.37	0.93	0.52	0.50	0.18	0.36	0.33	0.71	0.37	0.50	0.41	0.83	0.00	0.53	0.46	0.87	0.37	0.57	0.97	0.71
	TE	CH42	1.08	1.30	0.93	1.10	1.27	1.04	1.10	1.10	1.09	1.28	0.77	1.04	1.24	1.26	0.97	1.14	0.45	0.45	0.13	0.33	0.42	0.56	0.32	0.33	0.39	0.62	0.00	0.36	0.54	0.57	0.29	0.38	1.21	0.47
	Intel 100Ω	CH17	0.78	0.89	0.71	0.65	0.91	0.63	0.78	0.51	0.82	0.88	0.53	0.58	0.86	0.64	0.68	0.78	0.48	0.45	0.38	0.26	0.53	0.08	0.41	0.00	0.31	0.50	0.01	0.28	0.33	0.16	0.17	0.34	0.87	0.53
		CH18	0.92	0.81	0.41	0.52	0.51	0.67	0.05	0.51	0.58	0.83	0.00	0.50	0.10	0.65	0.20	0.43	0.45	0.55	0.09	0.27	0.45	0.26	0.29	0.13	0.15	0.53	0.01	0.23	0.29	0.20	0.09	0.24	0.79	0.47
		CH19	1.39	0.96	1.06	0.92	1.23	0.99	1.33	0.95	1.28	1.30	0.85	1.04	1.47	1.23	1.36	1.09	0.92	0.25	0.66	0.13	0.69	0.00	0.61	0.12	0.57	0.66	0.12	0.53	0.55	0.39	0.59	0.40	1.39	0.84
	Intel 85Ω	CH32	1.04	0.66	0.70	0.50	0.72	0.79	0.80	0.70	0.82	0.90	0.52	0.63	0.58	0.71	0.59	0.63	0.62	0.20	0.34	0.00	0.40	0.24	0.42	0.13	0.49	0.48	0.18	0.27	0.34	0.37	0.37	0.26	0.93	0.55
		CH33	1.01	0.73	0.65	0.57	0.54	0.68	0.63	0.57	0.71	0.89	0.31	0.58	0.35	0.56	0.29	0.37	0.70	0.47	0.31	0.00	0.36	0.29	0.10	0.17	0.48	0.61	0.08	0.27	0.04	0.32	0.08	0.14	0.84	0.50
		CH34	1.14	0.75	0.78	0.49	1.08	0.79	1.10	0.67	1.00	0.97	0.86	0.64	0.97	0.78	0.97	0.70	0.75	0.05	0.43	0.00	0.54	0.10	0.66	0.07	0.49	0.48	0.15	0.25	0.53	0.38	0.52	0.33	1.10	0.70
30dB	Cisco	CH8	1.43	1.31	1.03	1.09	1.38	1.55	1.25	1.21	1.58	1.88	1.21	1.51	1.72	1.94	1.48	1.62	0.51	0.37	0.00	0.08	0.46	0.62	0.23	0.19	0.87	1.07	0.46	0.61	1.04	1.16	0.72	0.72	1.65	0.73
	TE	CH43	1.28	1.35	0.98	1.10	1.34	1.20	1.10	1.07	1.44	1.60	1.28	1.14	1.58	1.55	1.12	1.38	0.39	0.44	0.00	0.14	0.41	0.44	0.14	0.14	0.62	0.83	0.39	0.42	0.76	0.78	0.37	0.59	1.39	0.54
	Intel 100Ω	CH23	1.43	1.45	1.15	1.15	1.43	1.29	1.21	1.07	1.65	1.73	1.37	1.39	1.69	1.59	1.28	1.49	0.49	0.27	0.12	0.15	0.41	0.23	0.19	0.00	0.65	0.83	0.46	0.57	0.69	0.62	0.47	0.53	1.53	0.59
		CH24	1.43	1.17	0.88	1.05	0.98	1.29	1.05	0.85	1.34	1.59	1.04	1.20	1.43	1.29	1.03	1.15	0.55	0.31	0.01	0.20	0.11	0.39	0.18	0.00	0.53	0.82	0.30	0.49	0.63	0.54	0.28	0.44	1.39	0.58
		CH25	1.64	1.46	1.28	1.23	1.59	1.34	1.45	1.15	1.84	1.86	1.68	1.62	1.96	1.72	1.77	1.65	0.70	0.21	0.33	0.21	0.61	0.13	0.43	0.00	0.77	0.92	0.59	0.68	0.86	0.65	0.62	0.67	1.72	0.75
	Intel 85Ω	CH38	1.62	1.42	1.03	1.13	1.48	1.48	1.34	0.95	1.53	1.82	1.56	1.48	1.67	1.43	1.43	1.57	0.66	0.50	0.32	0.00	0.60	0.46	0.31	0.22	1.00	0.92	0.64	0.67	0.69	0.91	0.73	0.64	1.66	0.70
		CH39	1.35	1.35	1.07	0.96	1.20	1.14	1.00	0.97	1.54	1.64	1.28	1.18	1.27	1.43	1.03	1.31	0.45	0.47	0.09	0.00	0.39	0.31	0.07	0.01	0.73	0.77	0.38	0.27	0.57	0.64	0.19	0.42	1.42	0.50
		CH40	1.63	1.26	1.07	0.97	1.51	1.28	1.42	0.80	1.61	1.69	1.58	1.34	1.75	1.28	1.47	1.48	0.60	0.29	0.40	0.00	0.67	0.16	0.47	0.07	0.98	0.85	0.68	0.48	0.97	0.83	0.80	0.73	1.63	0.75

- ΔCOM_B = COM_B minus the worst COM_B in the 34 Test Cases for the same channel.

Worst COM_A vs Worst COM_B (typ Zc=93Ω)

- Worst COM_B is worse than worst COM_A by up to 0.46dB
- COM_C is better than worst COM_A by up to 0.39dB



Worst COM_A vs Worst COM_B (typ Zc=93Ω)

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- Worst COM_B is worse than worst COM_A by up to
  - 0.46dB for 10dB loss, 0.28dB for 20dB loss, 0.19dB for 30dB loss
- COM_C is better than worst COM_A by up to
  - 0.06dB for 10dB loss, 0.39dB for 20dB loss, 0.01dB for 30dB loss

Loss	Channel Type	CH #	Worst Test Case of COM_A									Worst Test Case of COM_B										Difference	
			TC #	zp	Tx Rd	Tx Zc	Av,Afe	Ane	Rx Rd	Rx Zc	COM_A	TC #	zp	Tx Rd	Tx Zc	Av,Afe	Ane	Rx Rd	Rx Zc	COM_B	COM_C (Re-optimized LE)	COM_B - COM_A	COM_C - COM_A
10dB	Cisco	CH1	TC11	12	55	83.7	0.436	0.642	55	83.7	4.84	TC11	12	55	83.7	0.436	0.642	55	83.7	4.84	4.84	0.00	0.00
	TE	CH41	TC27	30	55	83.7	0.436	0.642	55	83.7	6.28	TC27	30	55	83.7	0.436	0.642	55	83.7	6.25	6.28	-0.03	0.00
	Intel 100Ω	CH11	TC27	30	55	83.7	0.436	0.642	55	83.7	4.82	TC27	30	55	83.7	0.436	0.642	55	83.7	4.37	4.82	-0.46	0.00
		CH12	TC11	12	55	83.7	0.436	0.642	55	83.7	4.65	TC27	30	55	83.7	0.436	0.642	55	83.7	4.64	4.70	-0.01	0.05
		CH13	TC11	12	55	83.7	0.436	0.642	55	83.7	3.93	TC27	30	55	83.7	0.436	0.642	55	83.7	3.71	3.98	-0.22	0.06
	Intel 85Ω	CH26	TC29	30	55	102.3	0.436	0.642	45	83.7	6.89	TC30	30	55	102.3	0.436	0.642	45	102.3	6.84	6.94	-0.05	0.05
		CH27	TC11	12	55	83.7	0.436	0.642	55	83.7	6.11	TC27	30	55	83.7	0.436	0.642	55	83.7	5.94	6.14	-0.17	0.03
		CH28	TC14	12	55	102.3	0.436	0.642	45	102.3	5.97	TC14	12	55	102.3	0.436	0.642	45	102.3	5.89	5.97	-0.08	0.00
20dB	Cisco	CH4	TC27	30	55	83.7	0.436	0.642	55	83.7	5.15	TC27	30	55	83.7	0.436	0.642	55	83.7	4.87	5.15	-0.28	0.00
	TE	CH42	TC27	30	55	83.7	0.436	0.642	55	83.7	4.52	TC27	30	55	83.7	0.436	0.642	55	83.7	4.25	4.52	-0.27	0.00
	Intel 100Ω	CH17	TC22	30	45	102.3	0.394	0.581	45	102.3	5.55	TC24	30	45	102.3	0.394	0.581	55	102.3	5.40	5.61	-0.15	0.07
		CH18	TC27	30	55	83.7	0.436	0.642	55	83.7	4.97	TC11	12	55	83.7	0.436	0.642	55	83.7	4.97	5.36	-0.01	0.39
		CH19	TC22	30	45	102.3	0.394	0.581	45	102.3	4.82	TC22	30	45	102.3	0.394	0.581	45	102.3	4.60	4.82	-0.22	0.00
	Intel 85Ω	CH32	TC20	30	45	83.7	0.394	0.581	55	102.3	6.25	TC20	30	45	83.7	0.394	0.581	55	102.3	6.21	6.25	-0.04	0.00
		CH33	TC20	30	45	83.7	0.394	0.581	55	102.3	5.88	TC20	30	45	83.7	0.394	0.581	55	102.3	5.75	5.88	-0.14	0.00
		CH34	TC20	30	45	83.7	0.394	0.581	55	102.3	5.56	TC20	30	45	83.7	0.394	0.581	55	102.3	5.47	5.56	-0.10	0.00
30dB	Cisco	CH8	TC19	30	45	83.7	0.394	0.581	55	83.7	2.45	TC19	30	45	83.7	0.394	0.581	55	83.7	2.27	2.45	-0.18	0.00
	TE	CH43	TC19	30	45	83.7	0.394	0.581	55	83.7	0.94	TC19	30	45	83.7	0.394	0.581	55	83.7	0.85	0.94	-0.10	0.00
	Intel 100Ω	CH23	TC24	30	45	102.3	0.394	0.581	55	102.3	2.24	TC24	30	45	102.3	0.394	0.581	55	102.3	2.14	2.24	-0.10	0.00
		CH24	TC19	30	45	83.7	0.394	0.581	55	83.7	2.10	TC24	30	45	102.3	0.394	0.581	55	102.3	1.98	2.11	-0.12	0.01
		CH25	TC24	30	45	102.3	0.394	0.581	55	102.3	1.99	TC24	30	45	102.3	0.394	0.581	55	102.3	1.80	1.99	-0.19	0.00
	Intel 85Ω	CH38	TC20	30	45	83.7	0.394	0.581	55	102.3	2.79	TC20	30	45	83.7	0.394	0.581	55	102.3	2.66	2.79	-0.13	0.00
		CH39	TC20	30	45	83.7	0.394	0.581	55	102.3	2.56	TC20	30	45	83.7	0.394	0.581	55	102.3	2.56	2.56	0.00	0.00
		CH40	TC20	30	45	83.7	0.394	0.581	55	102.3	2.51	TC20	30	45	83.7	0.394	0.581	55	102.3	2.41	2.51	-0.10	0.00

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Results for Typ Zc = 100Ω

- zp = 12mm (OC1, TC1-16) or 30mm (OC2, TC17-32)
- Rd = 50Ω (OC1-2), 45 or 55Ω (TC1-32)
- Z_c = 100Ω (OC1-2), 90 or 110Ω (TC1-32)
- A_v, A_fe = 0.415v (OC1-2), 0.394 or 0.436 v (TC1-32)
- A_ne = 0.611v (OC1-2), 0.581 or 0.642 v (TC1-32, selected by Tx Rd)

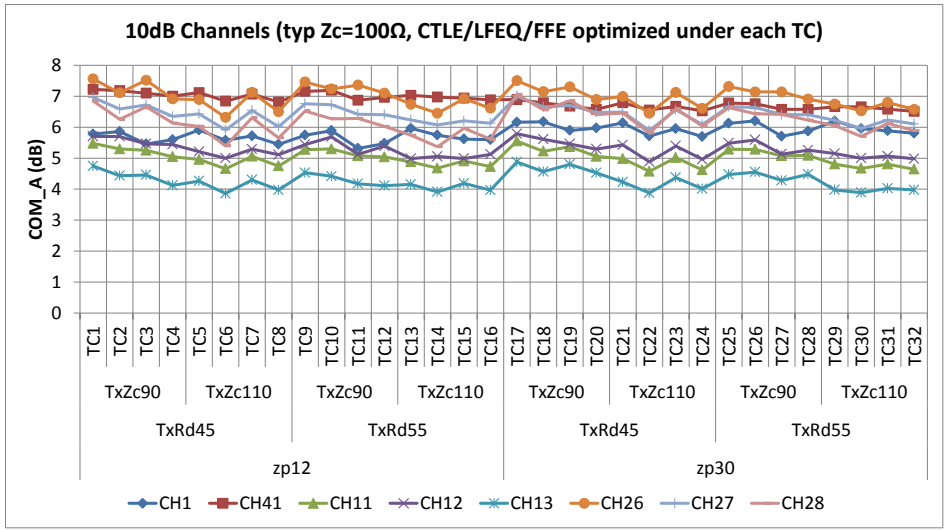
COM Parameters for typ Zc = 100Ω (012417)

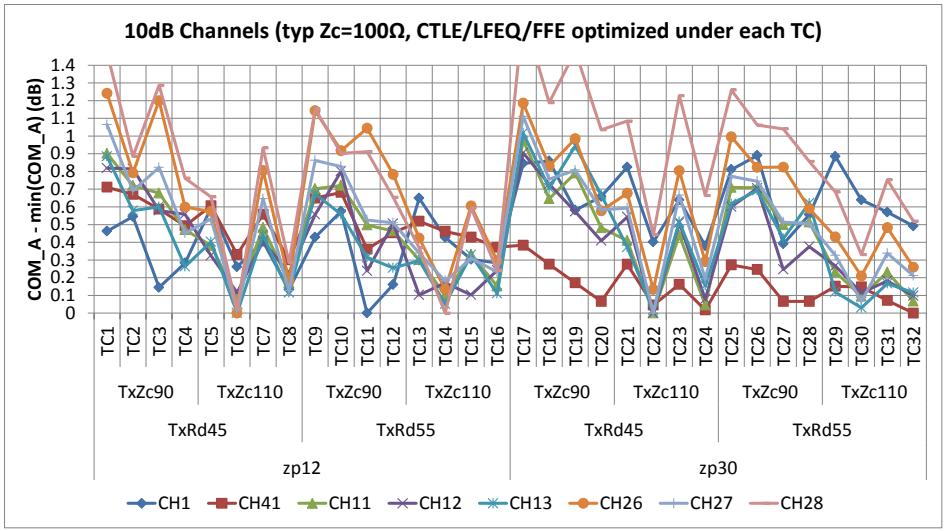
Condition #			TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	OC1
zp	Tx	Victim	12																
		FEXT	12																
		NEXT	12																
	Rx		12																
Rd	Tx (Victim, XT)		45								55								50
	Rx		45		55		45		55		45		55		45		55		50
Zc	Tx (Victim, XT)		90				110				90				110				100
	Rx		90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	100
Av			0.394								0.436								0.415
Afe			0.394								0.436								0.415
Ane			0.581								0.642								0.611

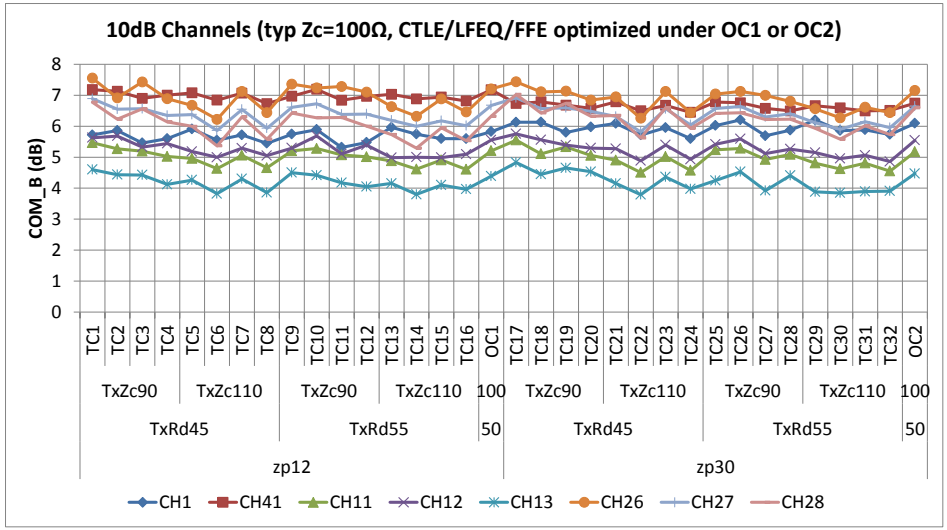
TC#			TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC2
zp	Tx	Victim	30																
		FEXT	30																
		NEXT	12																
	Rx		30																
Rd	Tx (Victim, XT)		45								55								50
	Rx		45		55		45		55		45		55		45		55		50
Zc	Tx (Victim, XT)		90				110				90				110				93
	Rx		90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	93
Av			0.394								0.436								0.415
Afe			0.394								0.436								0.415
Ane			0.581								0.642								0.611

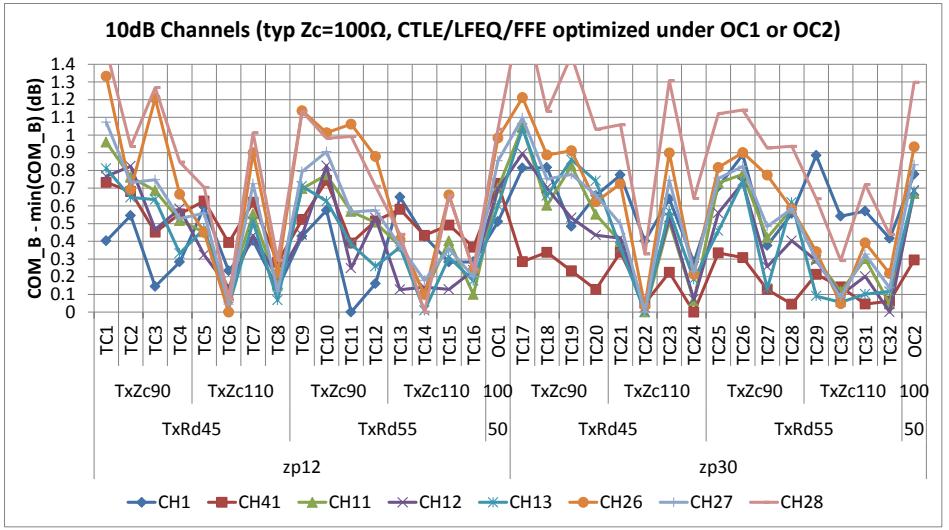
10dB Channels (typ Zc=100Ω)

- COM_B is similar to COM_A



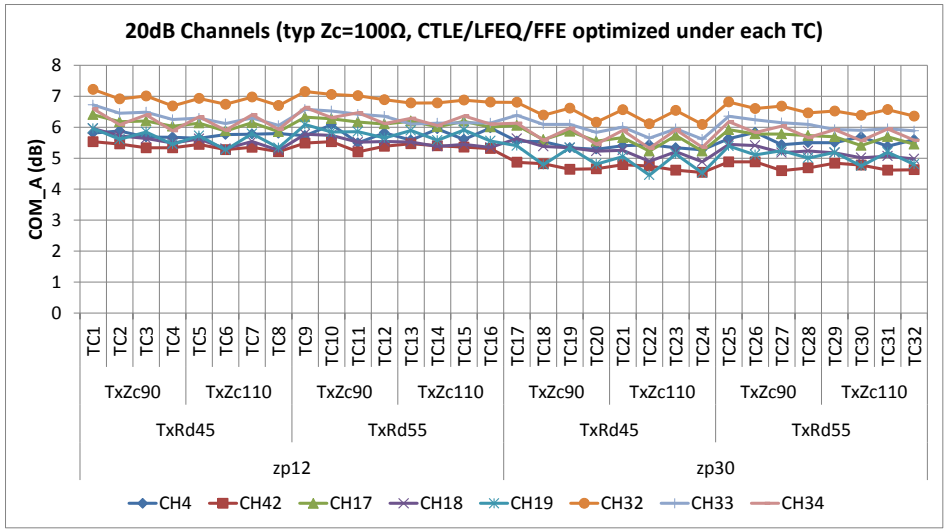


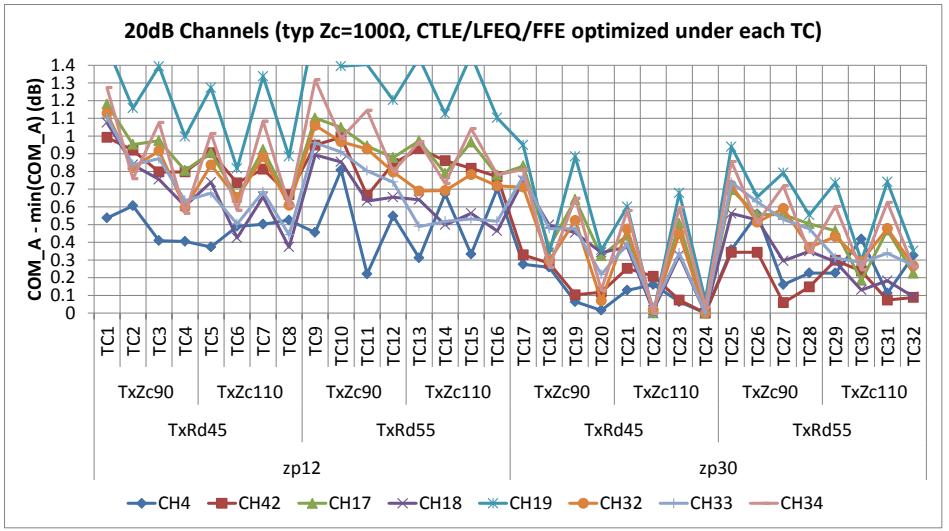


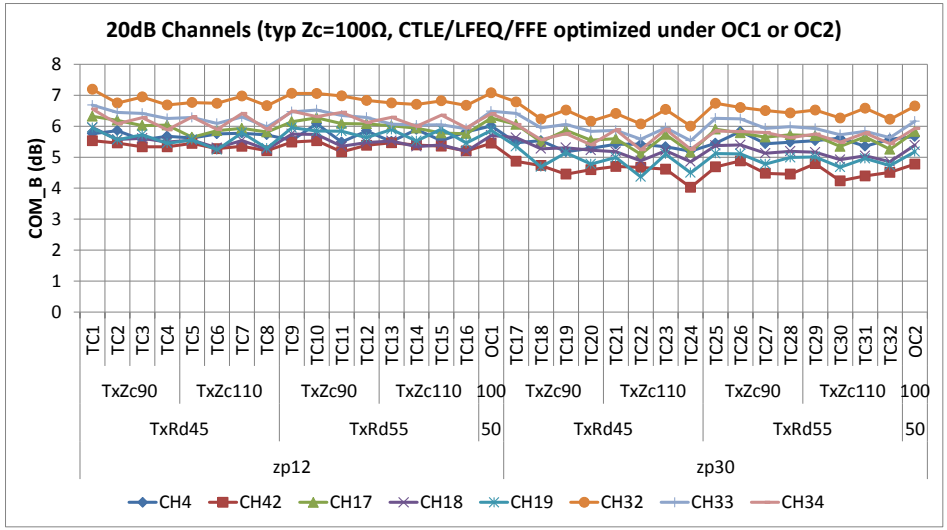


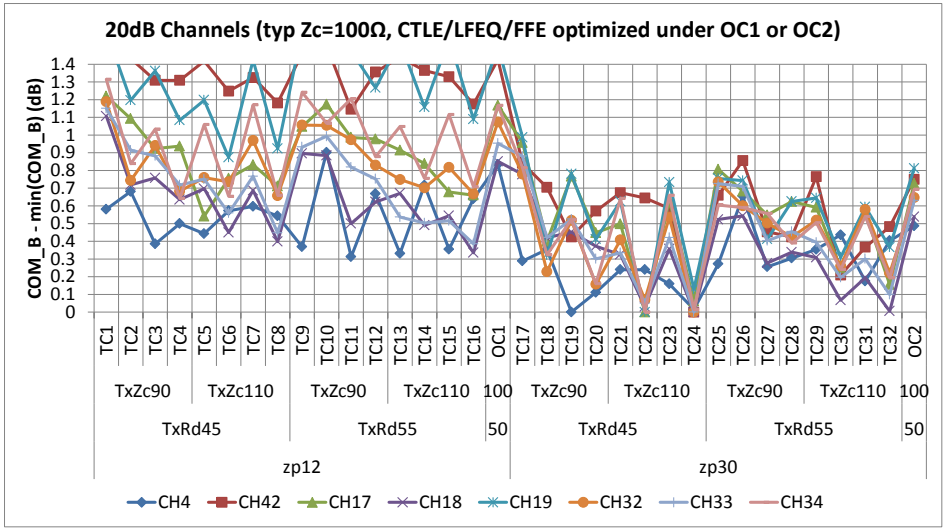
20dB Channels (typ Zc=100Ω)

- COM_B is similar to COM_A



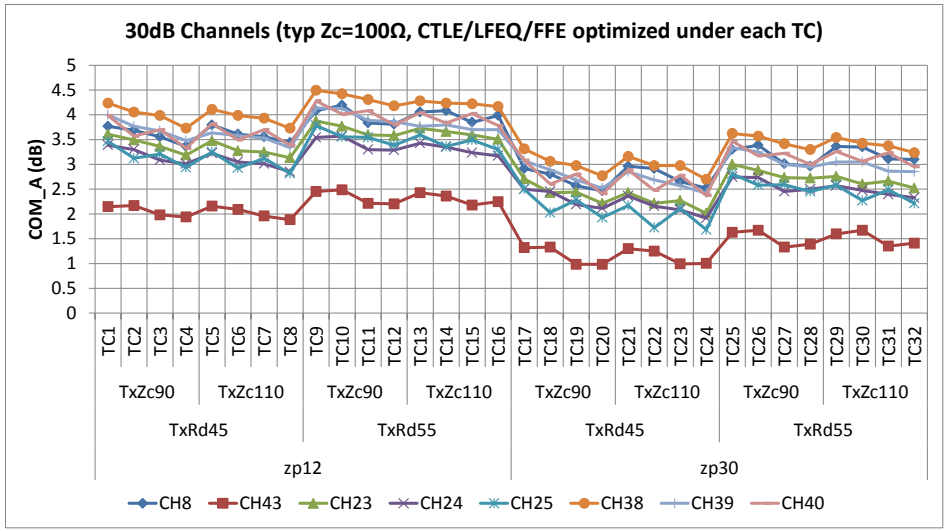


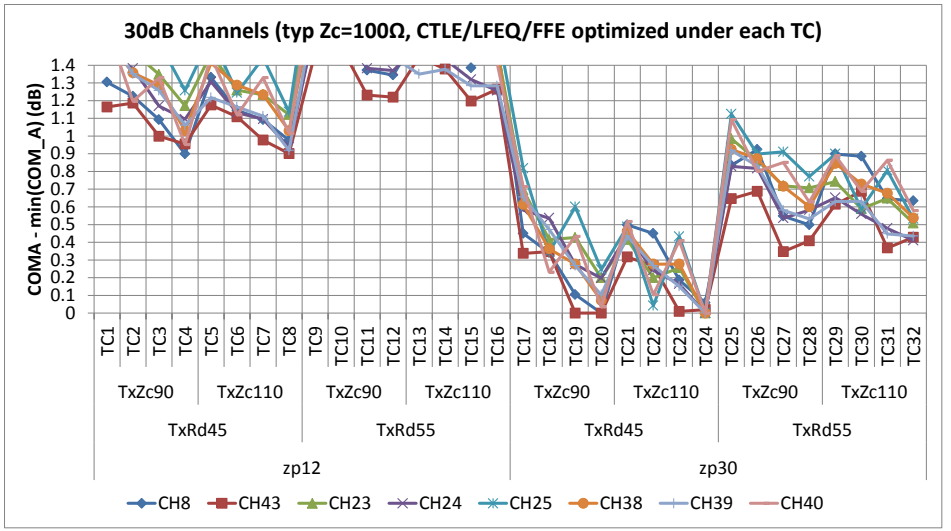


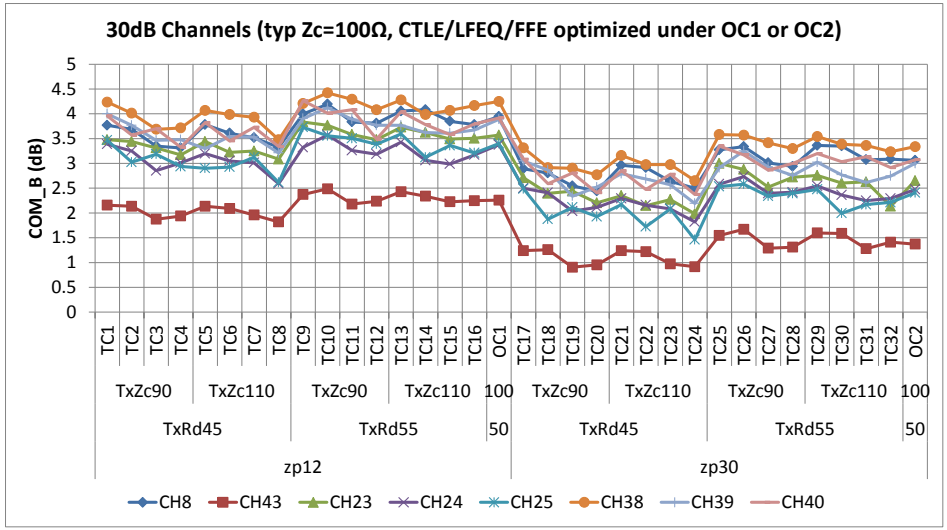


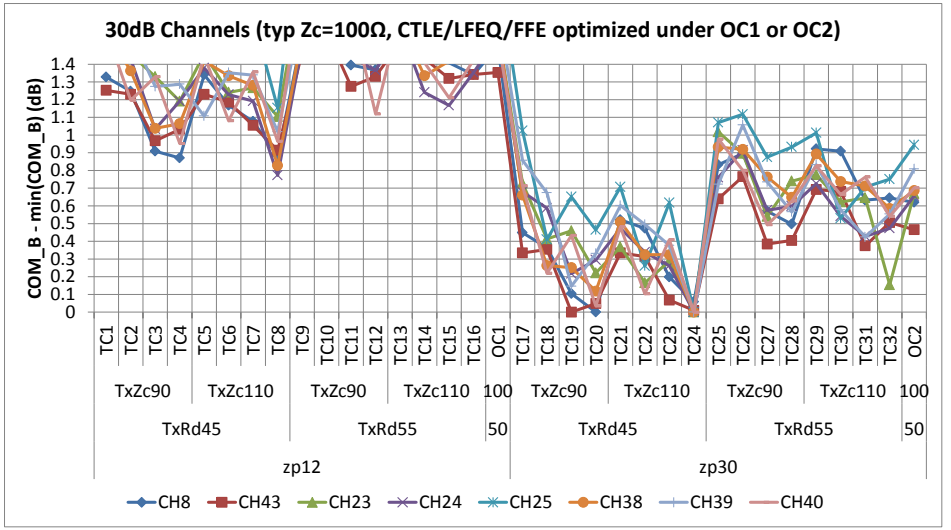
30dB Channels (typ Zc=100Ω)

- COM_B is similar to COM_A



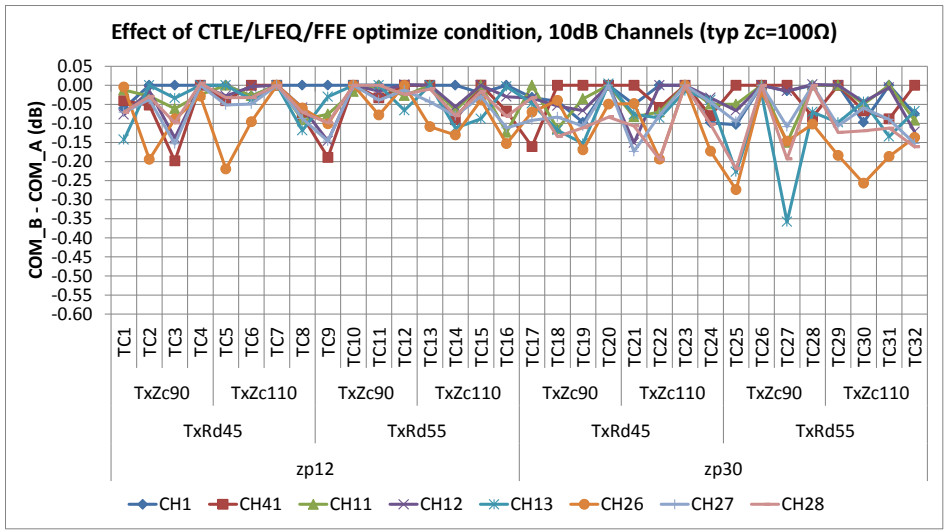


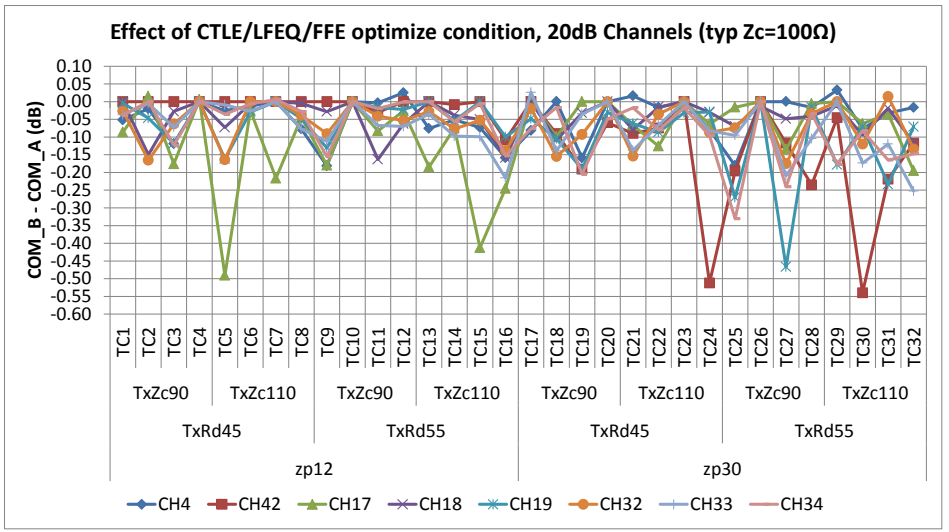


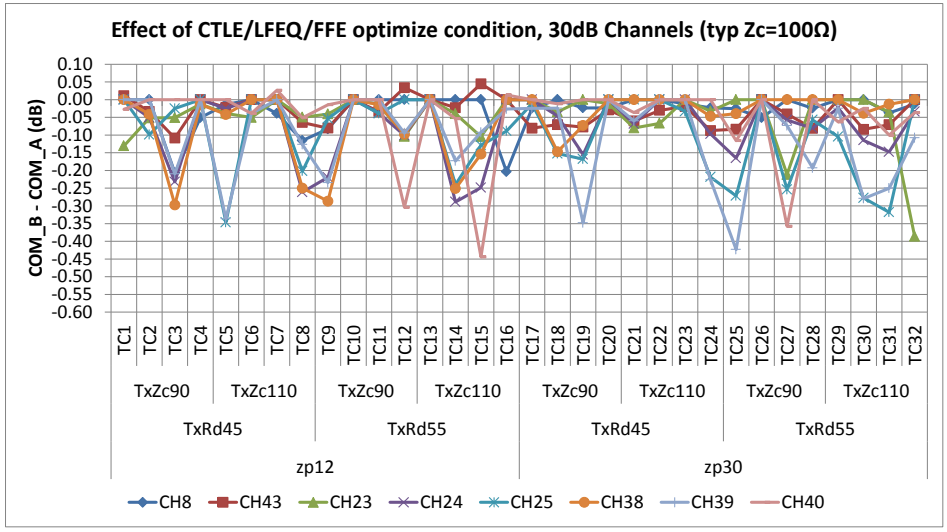


COM_A vs COM_B (typ Zc=100Ω)

- COM_B is worse than COM_A by up to 0.55dB







COM_A Values (typ Zc=100Ω) (010317)

FUJITSU

- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	TDR result (thru channel)	
		zp	12																30																	
		Tx Rd	45								55								45								55									
		Tx Zc	90				110				90				110				90				110				90				110					
		Av,Afe	0.394								0.436								0.394								0.436									
		Ane	0.581								0.642								0.581								0.642									
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55			
		Rx Zc	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	Z11	Z22
10dB	Cisco	CH1	5.78	5.86	5.46	5.60	5.91	5.58	5.72	5.45	5.74	5.89	5.31	5.48	5.96	5.74	5.62	5.60	6.16	6.17	5.90	5.97	6.14	5.72	5.95	5.69	6.13	6.20	5.71	5.87	6.20	5.95	5.88	5.81	94.79	98.92
	TE	CH41	7.22	7.18	7.10	7.00	7.12	6.84	7.07	6.81	7.16	7.19	6.87	6.96	7.03	6.97	6.94	6.88	6.89	6.79	6.68	6.58	6.79	6.56	6.67	6.53	6.78	6.76	6.58	6.58	6.66	6.66	6.58	6.51	97.25	96.54
	Intel 100Ω	CH11	5.48	5.30	5.25	5.05	4.96	4.66	5.06	4.75	5.28	5.30	5.07	5.04	4.88	4.68	4.91	4.73	5.55	5.22	5.37	5.06	4.99	4.58	5.02	4.62	5.29	5.28	5.08	5.09	4.81	4.67	4.81	4.64	99.25	97.11
		CH12	5.70	5.70	5.46	5.44	5.21	5.00	5.29	5.11	5.44	5.69	5.12	5.39	4.99	5.06	4.99	5.13	5.79	5.61	5.46	5.29	5.43	4.88	5.39	4.96	5.48	5.59	5.13	5.26	5.15	5.00	5.07	4.98	93.90	96.24
		CH13	4.74	4.44	4.46	4.12	4.26	3.86	4.30	3.97	4.53	4.42	4.17	4.11	4.16	3.91	4.19	3.97	4.88	4.56	4.80	4.53	4.23	3.88	4.37	4.01	4.48	4.55	4.28	4.48	3.98	3.89	4.03	3.97	104.24	97.89
	Intel 85Ω	CH26	7.56	7.11	7.52	6.92	6.89	6.32	7.12	6.50	7.46	7.23	7.36	7.10	6.74	6.45	6.92	6.61	7.50	7.15	7.30	6.89	6.99	6.45	7.12	6.61	7.31	7.14	7.14	6.91	6.75	6.53	6.80	6.58	87.58	87.37
		CH27	6.96	6.59	6.72	6.35	6.43	5.91	6.54	6.02	6.76	6.72	6.42	6.40	6.23	6.08	6.20	6.13	7.01	6.65	6.70	6.48	6.49	5.89	6.56	6.09	6.67	6.64	6.41	6.40	6.22	5.96	6.23	6.11	83.01	87.17
		CH28	6.84	6.26	6.66	6.13	6.03	5.40	6.30	5.66	6.52	6.27	6.28	6.03	5.74	5.37	5.96	5.61	7.06	6.56	6.85	6.41	6.46	5.81	6.60	6.04	6.63	6.43	6.41	6.23	6.05	5.70	6.12	5.89	92.08	87.58
20dB	Cisco	CH4	5.81	5.88	5.68	5.68	5.65	5.76	5.77	5.80	5.73	6.08	5.49	5.82	5.58	5.94	5.60	5.98	5.55	5.53	5.34	5.29	5.40	5.43	5.34	5.27	5.63	5.83	5.43	5.50	5.50	5.69	5.38	5.60	94.90	100.65
	TE	CH42	5.53	5.46	5.34	5.34	5.44	5.27	5.35	5.21	5.49	5.53	5.20	5.38	5.47	5.40	5.36	5.31	4.87	4.82	4.64	4.66	4.79	4.75	4.61	4.54	4.88	4.88	4.60	4.69	4.84	4.78	4.61	4.63	97.22	96.67
	Intel 100Ω	CH17	6.40	6.18	6.20	6.03	6.13	5.88	6.15	5.85	6.33	6.27	6.17	6.10	6.20	6.01	6.19	6.00	6.06	5.60	5.87	5.55	5.66	5.22	5.73	5.22	5.92	5.78	5.78	5.73	5.69	5.41	5.69	5.45	99.85	97.90
		CH18	5.96	5.72	5.64	5.49	5.62	5.31	5.54	5.25	5.78	5.74	5.52	5.54	5.52	5.38	5.45	5.35	5.63	5.38	5.34	5.22	5.26	4.90	5.21	4.88	5.45	5.41	5.18	5.23	5.17	5.01	5.07	4.97	93.17	94.83
		CH19	5.96	5.61	5.85	5.45	5.72	5.27	5.79	5.34	6.08	5.85	5.85	5.65	5.89	5.58	5.91	5.55	5.40	4.79	5.34	4.81	5.05	4.45	5.13	4.52	5.39	5.11	5.24	5.01	5.19	4.75	5.19	4.80	105.30	100.72
	Intel 85Ω	CH32	7.22	6.91	7.01	6.69	6.93	6.74	6.97	6.70	7.15	7.06	7.02	6.89	6.78	6.78	6.87	6.81	6.80	6.39	6.61	6.16	6.57	6.11	6.54	6.09	6.81	6.60	6.68	6.46	6.52	6.38	6.57	6.36	86.32	85.76
		CH33	6.72	6.45	6.49	6.25	6.29	6.12	6.30	6.06	6.57	6.52	6.42	6.35	6.10	6.13	6.15	6.13	6.39	6.09	6.09	5.83	6.00	5.65	5.95	5.61	6.35	6.24	6.14	6.09	5.93	5.90	5.95	5.88	81.38	83.65
		CH34	6.59	6.08	6.40	5.88	6.34	5.90	6.40	5.93	6.64	6.31	6.47	6.12	6.29	6.05	6.36	6.10	6.13	5.58	5.97	5.45	5.90	5.32	5.92	5.35	6.18	5.83	6.04	5.66	5.92	5.56	5.95	5.58	91.98	88.30
30dB	Cisco	CH8	3.77	3.69	3.56	3.36	3.80	3.61	3.56	3.44	4.08	4.19	3.84	3.81	4.05	4.08	3.85	3.99	2.91	2.81	2.57	2.46	2.96	2.91	2.65	2.52	3.30	3.39	3.01	2.96	3.36	3.35	3.11	3.10	96.34	100.63
	TE	CH43	2.15	2.17	1.98	1.94	2.16	2.09	1.96	1.88	2.45	2.49	2.21	2.20	2.43	2.36	2.18	2.25	1.32	1.33	0.98	0.98	1.30	1.25	0.99	1.00	1.63	1.67	1.33	1.39	1.60	1.67	1.35	1.41	97.23	96.65
	Intel 100Ω	CH23	3.61	3.49	3.36	3.19	3.48	3.27	3.25	3.14	3.88	3.77	3.60	3.58	3.73	3.66	3.60	3.50	2.71	2.43	2.44	2.21	2.43	2.21	2.27	2.01	3.00	2.88	2.73	2.72	2.76	2.60	2.66	2.52	99.97	97.29
		CH24	3.39	3.30	3.09	3.01	3.22	3.05	3.01	2.85	3.54	3.57	3.30	3.29	3.43	3.35	3.24	3.17	2.50	2.45	2.19	2.11	2.36	2.16	2.08	1.92	2.75	2.73	2.45	2.50	2.57	2.48	2.40	2.33	92.81	94.69
		CH25	3.47	3.12	3.21	2.94	3.25	2.93	3.12	2.82	3.78	3.56	3.54	3.39	3.60	3.36	3.49	3.30	2.50	2.03	2.28	1.93	2.17	1.72	2.11	1.68	2.81	2.58	2.59	2.45	2.58	2.27	2.49	2.21	105.33	100.56
	Intel 85Ω	CH38	4.24	4.05	3.99	3.73	4.11	3.99	3.93	3.73	4.50	4.42	4.31	4.18	4.28	4.24	4.22	4.17	3.31	3.06	2.97	2.77	3.16	2.97	2.97	2.70	3.62	3.57	3.41	3.30	3.54	3.43	3.38	3.24	86.79	86.56
		CH39	4.00	3.77	3.68	3.48	3.64	3.58	3.53	3.34	4.14	4.12	3.89	3.86	3.77	3.80	3.70	3.70	3.07	2.89	2.69	2.52	2.85	2.69	2.57	2.42	3.34	3.25	3.00	2.95	3.05	3.05	2.87	2.85	82.63	85.39
		CH40	3.99	3.57	3.70	3.32	3.82	3.49	3.70	3.39	4.28	4.01	4.08	3.80	4.04	3.84	4.03	3.78	3.09	2.60	2.81	2.41	2.89	2.48	2.78	2.37	3.47	3.17	3.22	3.00	3.26	3.06	3.24	2.95	91.73	88.19

ΔCOM_A Values (typ Zc=100Ω) (010317)

FUJITSU

- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	TDR result (thru channel)	
		zp	12																30																	
		Tx Rd	45								55								45								55									
		Tx Zc	90				110				90				110				90				110				90				110					
		Av,Afe	0.394								0.436								0.394								0.436									
		Ane	0.581								0.642								0.581								0.642									
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55			
		Rx Zc	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	Z11	Z22
10dB	Cisco	CH1	0.46	0.55	0.14	0.28	0.59	0.26	0.40	0.13	0.43	0.57	0.00	0.16	0.65	0.43	0.30	0.28	0.85	0.86	0.58	0.66	0.82	0.40	0.64	0.38	0.81	0.89	0.39	0.56	0.88	0.64	0.57	0.49	94.79	98.92
	TE	CH41	0.71	0.67	0.59	0.49	0.61	0.33	0.56	0.30	0.65	0.68	0.36	0.45	0.52	0.46	0.43	0.37	0.38	0.28	0.17	0.07	0.28	0.05	0.16	0.02	0.27	0.25	0.07	0.07	0.15	0.15	0.07	0.00	97.25	96.54
	Intel 100Ω	CH11	0.90	0.72	0.68	0.47	0.38	0.08	0.48	0.17	0.70	0.72	0.50	0.46	0.30	0.10	0.33	0.15	0.98	0.65	0.79	0.48	0.41	0.00	0.44	0.04	0.71	0.71	0.50	0.51	0.23	0.10	0.23	0.07	99.25	97.11
		CH12	0.82	0.81	0.58	0.56	0.32	0.12	0.41	0.23	0.56	0.80	0.24	0.50	0.10	0.17	0.10	0.24	0.90	0.73	0.57	0.41	0.54	0.00	0.51	0.08	0.60	0.71	0.25	0.38	0.27	0.11	0.18	0.10	93.90	96.24
		CH13	0.89	0.58	0.60	0.26	0.40	0.00	0.44	0.12	0.67	0.56	0.31	0.26	0.30	0.05	0.33	0.11	1.02	0.71	0.94	0.67	0.37	0.02	0.52	0.15	0.62	0.69	0.42	0.62	0.12	0.03	0.17	0.12	104.24	97.89
	Intel 85Ω	CH26	1.24	0.79	1.20	0.60	0.57	0.00	0.80	0.18	1.14	0.92	1.04	0.78	0.42	0.13	0.61	0.29	1.19	0.83	0.99	0.58	0.68	0.13	0.80	0.29	1.00	0.82	0.82	0.59	0.43	0.21	0.48	0.26	87.58	87.37
		CH27	1.06	0.69	0.82	0.45	0.53	0.02	0.65	0.13	0.86	0.83	0.53	0.51	0.34	0.18	0.31	0.23	1.11	0.76	0.81	0.58	0.59	0.00	0.67	0.19	0.77	0.74	0.51	0.51	0.33	0.07	0.34	0.21	83.01	87.17
		CH28	1.47	0.89	1.29	0.76	0.66	0.03	0.93	0.28	1.15	0.90	0.91	0.65	0.37	0.00	0.59	0.24	1.69	1.19	1.48	1.04	1.08	0.44	1.23	0.66	1.26	1.06	1.04	0.86	0.68	0.33	0.75	0.52	92.08	87.58
20dB	Cisco	CH4	0.54	0.61	0.41	0.40	0.37	0.49	0.50	0.52	0.46	0.81	0.22	0.55	0.31	0.67	0.33	0.70	0.28	0.26	0.06	0.02	0.13	0.16	0.06	0.00	0.36	0.56	0.16	0.23	0.23	0.42	0.11	0.32	94.90	100.65
	TE	CH42	0.99	0.92	0.80	0.80	0.91	0.74	0.81	0.67	0.95	0.99	0.66	0.84	0.93	0.86	0.82	0.77	0.33	0.28	0.10	0.12	0.25	0.21	0.07	0.00	0.34	0.34	0.06	0.15	0.30	0.24	0.07	0.09	97.22	96.67
	Intel 100Ω	CH17	1.18	0.95	0.97	0.81	0.91	0.65	0.92	0.63	1.10	1.05	0.94	0.88	0.97	0.79	0.97	0.78	0.83	0.37	0.64	0.32	0.44	0.00	0.51	0.00	0.70	0.56	0.56	0.50	0.47	0.18	0.47	0.22	99.85	97.90
		CH18	1.08	0.84	0.75	0.60	0.74	0.42	0.66	0.37	0.89	0.85	0.63	0.65	0.64	0.50	0.56	0.46	0.75	0.50	0.45	0.34	0.37	0.02	0.33	0.00	0.56	0.53	0.29	0.35	0.29	0.13	0.18	0.09	93.17	94.83
		CH19	1.51	1.16	1.39	1.00	1.27	0.82	1.34	0.88	1.63	1.39	1.40	1.20	1.44	1.13	1.46	1.10	0.95	0.34	0.88	0.36	0.60	0.00	0.68	0.07	0.94	0.66	0.79	0.55	0.74	0.29	0.74	0.35	105.30	100.72
	Intel 85Ω	CH32	1.13	0.82	0.92	0.60	0.84	0.65	0.88	0.61	1.06	0.97	0.93	0.80	0.69	0.69	0.78	0.72	0.71	0.30	0.52	0.07	0.47	0.02	0.45	0.00	0.72	0.51	0.59	0.37	0.43	0.29	0.48	0.27	86.32	85.76
		CH33	1.10	0.84	0.87	0.64	0.68	0.50	0.68	0.44	0.96	0.91	0.80	0.74	0.49	0.52	0.53	0.52	0.77	0.48	0.48	0.22	0.39	0.03	0.34	0.00	0.74	0.63	0.53	0.48	0.31	0.29	0.34	0.27	81.38	83.65
		CH34	1.27	0.76	1.08	0.56	1.02	0.58	1.08	0.61	1.32	0.99	1.15	0.80	0.97	0.73	1.04	0.78	0.81	0.26	0.65	0.13	0.58	0.00	0.60	0.03	0.86	0.51	0.72	0.34	0.60	0.24	0.63	0.26	91.98	88.30
30dB	Cisco	CH8	1.30	1.22	1.09	0.90	1.33	1.15	1.09	0.98	1.62	1.73	1.37	1.34	1.59	1.62	1.39	1.52	0.45	0.34	0.10	0.00	0.50	0.45	0.19	0.06	0.83	0.92	0.55	0.50	0.90	0.89	0.65	0.63	96.34	100.63
	TE	CH43	1.16	1.19	1.00	0.96	1.18	1.11	0.98	0.90	1.47	1.50	1.23	1.22	1.45	1.38	1.20	1.26	0.34	0.35	0.00	0.00	0.32	0.27	0.01	0.02	0.65	0.69	0.35	0.41	0.61	0.69	0.37	0.43	97.23	96.65
	Intel 100Ω	CH23	1.59	1.48	1.35	1.17	1.46	1.26	1.23	1.12	1.86	1.75	1.58	1.57	1.71	1.65	1.58	1.49	0.70	0.42	0.43	0.20	0.42	0.20	0.26	0.00	0.98	0.86	0.72	0.71	0.74	0.59	0.65	0.51	99.97	97.29
		CH24	1.47	1.38	1.17	1.10	1.31	1.13	1.10	0.94	1.63	1.65	1.38	1.37	1.51	1.43	1.32	1.26	0.58	0.54	0.28	0.20	0.44	0.24	0.16	0.00	0.83	0.82	0.54	0.58	0.65	0.56	0.48	0.41	92.81	94.69
		CH25	1.78	1.44	1.53	1.26	1.57	1.24	1.44	1.14	2.10	1.88	1.86	1.71	1.91	1.68	1.81	1.62	0.82	0.34	0.60	0.25	0.49	0.04	0.43	0.00	1.12	0.90	0.91	0.77	0.90	0.59	0.81	0.53	105.33	100.56
	Intel 85Ω	CH38	1.54	1.36	1.29	1.03	1.41	1.29	1.23	1.03	1.80	1.72	1.61	1.48	1.58	1.54	1.52	1.47	0.61	0.36	0.28	0.07	0.46	0.28	0.28	0.00	0.92	0.87	0.72	0.60	0.85	0.73	0.68	0.54	86.79	86.56
		CH39	1.58	1.35	1.26	1.06	1.22	1.16	1.11	0.92	1.72	1.71	1.47	1.44	1.35	1.38	1.28	1.28	0.66	0.47	0.27	0.10	0.44	0.27	0.15	0.00	0.92	0.83	0.58	0.53	0.63	0.63	0.45	0.44	82.63	85.39
		CH40	1.61	1.20	1.33	0.95	1.45	1.12	1.33	1.02	1.91	1.64	1.71	1.42	1.67	1.46	1.65	1.41	0.71	0.23	0.43	0.03	0.52	0.10	0.41	0.00	1.09	0.80	0.85	0.63	0.89	0.69	0.86	0.58	91.73	88.19

- ΔCOM_A = COM_A minus the worst COM_A in the 32 Test Cases for the same channel.

COM_B Values (typ Zc=100Ω) (013117)

FUJITSU

- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC1	OC2
		zp	12																30																12	30
		Tx Rd	45								55								45								55								50	
		Tx Zc	90				110				90				110				90				110				90				110				100	
		Av,Afe	0.394								0.436								0.394								0.436								0.415	
		Ane	0.581								0.642								0.581								0.642								0.611	
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55		50	
		Rx Zc	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	100	
10dB	Cisco	CH1	5.72	5.86	5.46	5.60	5.91	5.55	5.72	5.45	5.74	5.89	5.31	5.48	5.96	5.74	5.60	5.60	6.13	6.13	5.80	5.97	6.09	5.72	5.95	5.60	6.02	6.20	5.69	5.87	6.20	5.86	5.88	5.73	5.82	6.09
	TE	CH41	7.18	7.13	6.90	7.00	7.08	6.84	7.07	6.73	6.97	7.19	6.84	6.96	7.03	6.88	6.94	6.81	6.73	6.79	6.68	6.58	6.79	6.50	6.67	6.45	6.78	6.76	6.58	6.49	6.66	6.59	6.49	6.51	7.18	6.74
	Intel 100Ω	CH11	5.47	5.27	5.19	5.02	4.96	4.63	5.06	4.66	5.20	5.28	5.07	5.01	4.88	4.61	4.91	4.61	5.55	5.11	5.33	5.06	4.90	4.51	5.02	4.57	5.24	5.28	4.93	5.09	4.81	4.62	4.81	4.55	5.21	5.17
		CH12	5.63	5.68	5.33	5.44	5.18	5.00	5.29	5.05	5.30	5.69	5.11	5.39	4.99	5.00	4.99	5.10	5.75	5.56	5.39	5.29	5.28	4.88	5.39	4.93	5.42	5.59	5.12	5.26	5.15	4.96	5.06	4.86	5.55	5.55
		CH13	4.60	4.44	4.42	4.12	4.26	3.82	4.30	3.86	4.50	4.42	4.17	4.05	4.16	3.80	4.10	3.97	4.83	4.45	4.65	4.53	4.15	3.79	4.36	3.97	4.25	4.53	3.92	4.41	3.88	3.85	3.89	3.91	4.39	4.47
	Intel 85Ω	CH26	7.55	6.91	7.43	6.89	6.67	6.22	7.12	6.44	7.36	7.23	7.28	7.10	6.63	6.32	6.88	6.46	7.43	7.11	7.13	6.84	6.94	6.26	7.12	6.43	7.04	7.12	6.99	6.80	6.56	6.27	6.61	6.44	7.20	7.15
		CH27	6.89	6.55	6.56	6.35	6.38	5.86	6.54	5.93	6.61	6.72	6.38	6.39	6.19	6.00	6.17	6.02	6.91	6.57	6.59	6.48	6.31	5.82	6.56	6.04	6.57	6.64	6.30	6.40	6.11	5.90	6.14	5.95	6.67	6.65
		CH28	6.77	6.23	6.56	6.14	6.00	5.36	6.30	5.58	6.42	6.27	6.28	6.00	5.73	5.29	5.95	5.53	7.03	6.43	6.74	6.32	6.35	5.62	6.60	5.93	6.41	6.43	6.22	6.23	5.93	5.58	6.01	5.73	6.32	6.59
20dB	Cisco	CH4	5.76	5.86	5.56	5.68	5.62	5.75	5.77	5.72	5.55	6.08	5.49	5.84	5.51	5.89	5.53	5.82	5.47	5.53	5.18	5.29	5.42	5.42	5.34	5.19	5.45	5.83	5.43	5.48	5.53	5.61	5.35	5.58	6.01	5.66
	TE	CH42	5.53	5.46	5.34	5.34	5.44	5.27	5.35	5.21	5.49	5.53	5.17	5.38	5.47	5.39	5.36	5.20	4.87	4.73	4.45	4.60	4.70	4.67	4.61	4.03	4.69	4.88	4.48	4.45	4.79	4.24	4.39	4.51	5.45	4.78
	Intel 100Ω	CH17	6.32	6.19	6.02	6.04	5.64	5.85	5.93	5.81	6.15	6.27	6.09	6.08	6.01	5.94	5.78	5.76	6.06	5.50	5.87	5.55	5.60	5.10	5.73	5.16	5.90	5.78	5.65	5.72	5.69	5.35	5.66	5.25	6.27	5.82
		CH18	5.96	5.57	5.61	5.49	5.55	5.30	5.54	5.25	5.75	5.74	5.35	5.47	5.52	5.34	5.40	5.19	5.63	5.27	5.30	5.22	5.18	4.88	5.21	4.85	5.38	5.40	5.13	5.19	5.16	4.92	5.05	4.86	5.70	5.39
		CH19	5.95	5.56	5.73	5.45	5.56	5.24	5.79	5.29	5.95	5.85	5.84	5.63	5.89	5.52	5.91	5.45	5.35	4.69	5.15	4.78	4.99	4.36	5.10	4.50	5.12	5.11	4.78	4.99	5.01	4.68	4.96	4.73	5.87	5.18
	Intel 85Ω	CH32	7.19	6.75	6.94	6.69	6.76	6.74	6.97	6.66	7.06	7.06	6.98	6.83	6.75	6.71	6.82	6.67	6.78	6.23	6.52	6.16	6.41	6.07	6.54	6.00	6.74	6.60	6.51	6.43	6.52	6.26	6.58	6.22	7.08	6.65
		CH33	6.68	6.45	6.41	6.25	6.28	6.09	6.30	5.98	6.46	6.52	6.35	6.28	6.07	6.03	6.05	5.92	6.41	5.95	6.06	5.83	5.87	5.58	5.95	5.53	6.26	6.24	5.93	5.99	5.93	5.73	5.83	5.63	6.48	6.16
		CH34	6.56	6.08	6.27	5.88	6.30	5.89	6.41	5.90	6.48	6.31	6.45	6.12	6.29	6.00	6.36	5.95	6.06	5.56	5.76	5.40	5.88	5.24	5.90	5.26	5.85	5.83	5.80	5.63	5.75	5.48	5.78	5.43	6.41	5.93
30dB	Cisco	CH8	3.77	3.69	3.35	3.31	3.78	3.61	3.52	3.32	4.00	4.19	3.84	3.81	4.05	4.08	3.85	3.78	2.89	2.81	2.55	2.44	2.96	2.91	2.64	2.50	3.27	3.34	3.01	2.94	3.36	3.35	3.07	3.09	3.94	3.06
	TE	CH43	2.16	2.14	1.87	1.94	2.14	2.09	1.96	1.82	2.37	2.49	2.18	2.24	2.43	2.34	2.23	2.25	1.24	1.26	0.91	0.95	1.24	1.22	0.97	0.92	1.55	1.67	1.29	1.31	1.60	1.59	1.28	1.41	2.26	1.37
	Intel 100Ω	CH23	3.48	3.44	3.31	3.17	3.44	3.22	3.25	3.09	3.84	3.77	3.58	3.48	3.73	3.62	3.49	3.50	2.71	2.40	2.44	2.20	2.35	2.15	2.27	1.98	3.00	2.88	2.52	2.72	2.76	2.60	2.63	2.14	3.57	2.65
		CH24	3.39	3.25	2.85	3.01	3.20	3.05	3.01	2.59	3.32	3.57	3.26	3.19	3.43	3.06	2.99	3.17	2.50	2.41	2.04	2.11	2.29	2.16	2.08	1.82	2.58	2.73	2.40	2.42	2.55	2.36	2.25	2.29	3.38	2.48
		CH25	3.47	3.02	3.19	2.94	2.90	2.93	3.12	2.62	3.73	3.56	3.50	3.39	3.60	3.12	3.36	3.21	2.49	1.87	2.11	1.93	2.17	1.72	2.08	1.46	2.53	2.58	2.34	2.40	2.48	1.99	2.17	2.21	3.40	2.41
	Intel 85Ω	CH38	4.24	4.01	3.69	3.72	4.07	3.99	3.93	3.48	4.21	4.42	4.29	4.08	4.28	3.99	4.07	4.17	3.31	2.91	2.90	2.77	3.16	2.97	2.97	2.65	3.58	3.57	3.41	3.30	3.54	3.39	3.36	3.24	4.25	3.34
		CH39	4.00	3.77	3.47	3.48	3.30	3.54	3.53	3.21	3.90	4.12	3.89	3.77	3.77	3.62	3.61	3.68	3.05	2.87	2.34	2.52	2.79	2.69	2.57	2.19	2.91	3.25	2.93	2.76	3.02	2.77	2.62	2.75	3.89	3.00
		CH40	3.96	3.57	3.70	3.32	3.82	3.45	3.73	3.34	4.26	4.01	4.08	3.49	4.04	3.78	3.58	3.80	3.09	2.59	2.81	2.41	2.85	2.48	2.78	2.37	3.35	3.17	2.87	3.00	3.20	3.04	3.14	2.91	3.92	3.07

ΔCOM_B Values (typ Zc=100Ω) (013117)

FUJITSU

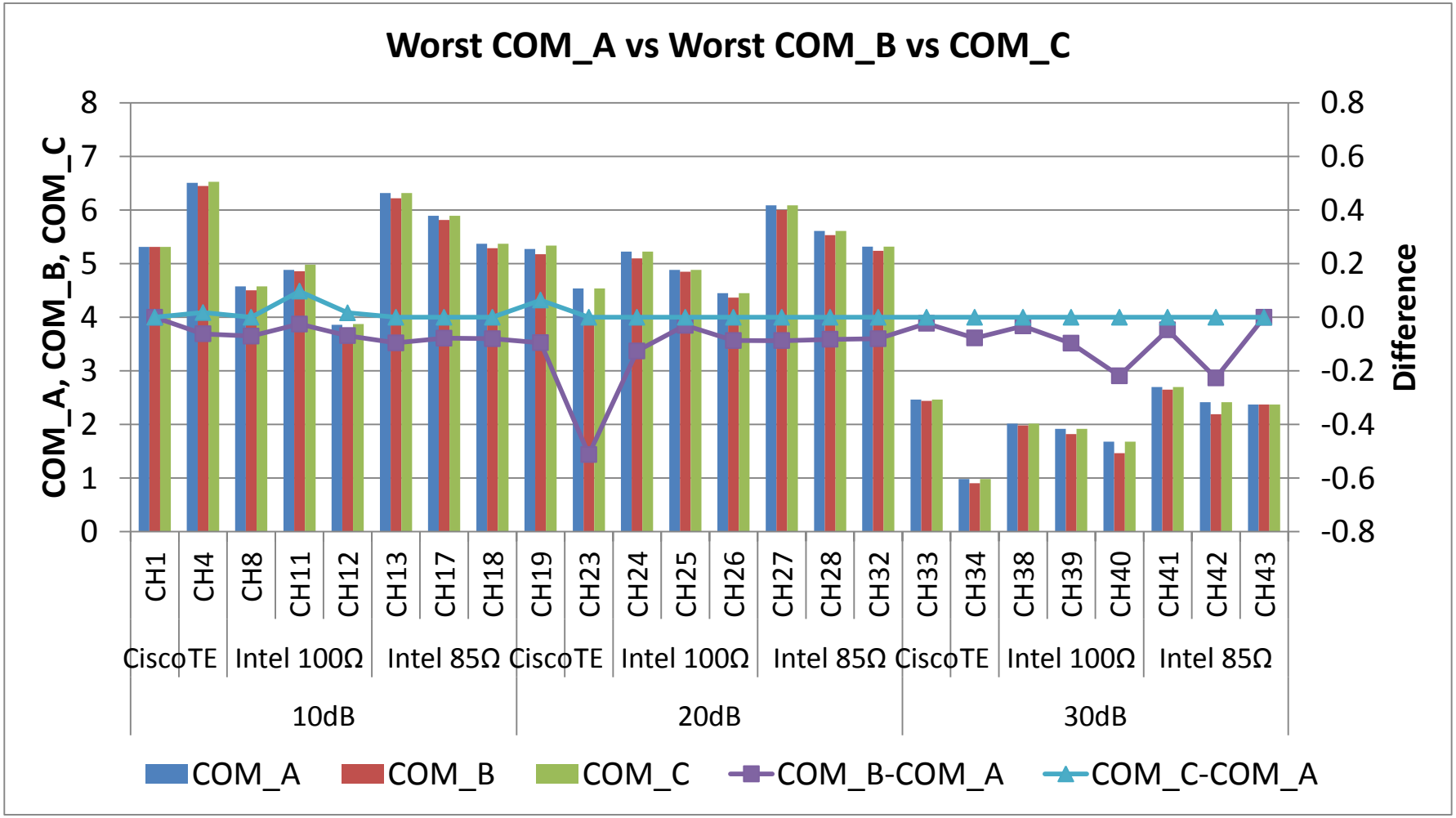
- Red cells are the worst case for the channel.

Loss	Channel Type	TC #	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15	TC16	TC17	TC18	TC19	TC20	TC21	TC22	TC23	TC24	TC25	TC26	TC27	TC28	TC29	TC30	TC31	TC32	OC1	OC2
		zp	12																30																12	30
		Tx Rd	45								55								45								55								50	
		Tx Zc	90				110				90				110				90				110				90				110				100	
		Av,Afe	0.394								0.436								0.394								0.436								0.415	
		Ane	0.581								0.642								0.581								0.642								0.611	
		Rx Rd	45		55		45		55		45		55		45		55		45		55		45		55		45		55		45		55		50	
		Rx Zc	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	90	110	100	
10dB	Cisco	CH1	0.40	0.55	0.14	0.28	0.59	0.23	0.40	0.13	0.43	0.57	0.00	0.16	0.65	0.43	0.28	0.28	0.81	0.82	0.48	0.66	0.77	0.40	0.64	0.28	0.71	0.89	0.38	0.56	0.88	0.54	0.57	0.42	0.51	0.78
	TE	CH41	0.73	0.68	0.45	0.55	0.63	0.39	0.62	0.28	0.52	0.74	0.39	0.51	0.58	0.43	0.49	0.37	0.28	0.34	0.23	0.13	0.34	0.05	0.22	0.00	0.33	0.31	0.13	0.05	0.21	0.14	0.05	0.06	0.73	0.29
	Intel 100Ω	CH11	0.96	0.76	0.69	0.52	0.45	0.13	0.55	0.15	0.70	0.77	0.57	0.51	0.37	0.11	0.40	0.10	1.05	0.60	0.83	0.55	0.40	0.00	0.51	0.07	0.73	0.78	0.42	0.58	0.30	0.12	0.30	0.04	0.70	0.67
		CH12	0.77	0.82	0.47	0.58	0.32	0.14	0.43	0.19	0.44	0.83	0.25	0.53	0.13	0.14	0.13	0.24	0.90	0.70	0.53	0.43	0.42	0.03	0.53	0.07	0.56	0.73	0.26	0.40	0.29	0.10	0.20	0.00	0.70	0.69
		CH13	0.81	0.65	0.64	0.33	0.47	0.03	0.51	0.07	0.71	0.63	0.38	0.26	0.37	0.01	0.31	0.18	1.04	0.66	0.86	0.74	0.36	0.00	0.57	0.18	0.46	0.74	0.13	0.62	0.09	0.06	0.10	0.12	0.60	0.68
	Intel 85Ω	CH26	1.33	0.69	1.21	0.67	0.45	0.00	0.90	0.22	1.14	1.01	1.06	0.88	0.41	0.10	0.66	0.24	1.21	0.89	0.91	0.62	0.72	0.03	0.90	0.21	0.82	0.90	0.77	0.58	0.34	0.05	0.39	0.22	0.98	0.93
		CH27	1.07	0.73	0.75	0.53	0.56	0.04	0.72	0.12	0.79	0.91	0.56	0.57	0.37	0.18	0.36	0.20	1.10	0.75	0.78	0.66	0.50	0.00	0.74	0.23	0.76	0.82	0.48	0.58	0.30	0.08	0.33	0.14	0.85	0.83
		CH28	1.48	0.94	1.27	0.85	0.70	0.07	1.01	0.29	1.13	0.98	0.99	0.71	0.44	0.00	0.66	0.24	1.74	1.13	1.45	1.03	1.06	0.33	1.31	0.64	1.12	1.14	0.93	0.94	0.64	0.29	0.72	0.44	1.03	1.30
20dB	Cisco	CH4	0.58	0.68	0.38	0.50	0.44	0.57	0.60	0.54	0.37	0.90	0.31	0.67	0.33	0.72	0.35	0.64	0.29	0.35	0.00	0.11	0.24	0.24	0.16	0.02	0.27	0.65	0.26	0.30	0.35	0.44	0.18	0.40	0.83	0.49
	TE	CH42	1.51	1.43	1.31	1.31	1.42	1.25	1.33	1.18	1.46	1.51	1.15	1.36	1.44	1.36	1.33	1.18	0.84	0.70	0.42	0.57	0.67	0.64	0.59	0.00	0.66	0.86	0.45	0.42	0.76	0.21	0.37	0.48	1.43	0.75
	Intel 100Ω	CH17	1.22	1.09	0.92	0.94	0.54	0.76	0.83	0.71	1.05	1.17	0.99	0.98	0.91	0.84	0.68	0.66	0.96	0.40	0.77	0.45	0.50	0.00	0.63	0.06	0.81	0.68	0.55	0.62	0.59	0.25	0.56	0.16	1.17	0.73
		CH18	1.11	0.72	0.76	0.64	0.70	0.45	0.69	0.40	0.90	0.88	0.50	0.62	0.67	0.49	0.54	0.34	0.78	0.42	0.45	0.37	0.32	0.03	0.36	0.00	0.52	0.54	0.28	0.34	0.31	0.07	0.19	0.01	0.85	0.54
		CH19	1.59	1.20	1.36	1.08	1.20	0.87	1.42	0.92	1.59	1.48	1.47	1.27	1.53	1.16	1.54	1.09	0.99	0.32	0.78	0.41	0.62	0.00	0.73	0.13	0.76	0.74	0.41	0.62	0.64	0.31	0.59	0.37	1.50	0.81
	Intel 85Ω	CH32	1.19	0.74	0.94	0.68	0.76	0.74	0.97	0.66	1.06	1.05	0.97	0.83	0.75	0.70	0.82	0.67	0.78	0.23	0.52	0.16	0.41	0.07	0.54	0.00	0.74	0.60	0.50	0.42	0.52	0.26	0.58	0.22	1.07	0.65
		CH33	1.15	0.91	0.88	0.72	0.75	0.56	0.77	0.45	0.93	0.99	0.82	0.75	0.54	0.50	0.52	0.39	0.88	0.42	0.52	0.30	0.33	0.05	0.42	0.00	0.73	0.71	0.40	0.46	0.39	0.20	0.30	0.10	0.95	0.63
		CH34	1.32	0.84	1.03	0.64	1.06	0.65	1.17	0.66	1.24	1.07	1.21	0.88	1.05	0.76	1.12	0.71	0.82	0.32	0.52	0.16	0.64	0.00	0.66	0.02	0.60	0.59	0.56	0.39	0.51	0.24	0.54	0.19	1.17	0.69
30dB	Cisco	CH8	1.33	1.25	0.91	0.87	1.34	1.17	1.08	0.88	1.56	1.75	1.39	1.37	1.61	1.64	1.41	1.34	0.45	0.36	0.10	0.00	0.52	0.47	0.20	0.06	0.83	0.90	0.57	0.50	0.92	0.91	0.63	0.64	1.50	0.62
	TE	CH43	1.25	1.23	0.97	1.03	1.23	1.19	1.05	0.91	1.47	1.58	1.27	1.33	1.52	1.43	1.32	1.34	0.33	0.35	0.00	0.05	0.33	0.31	0.07	0.01	0.64	0.77	0.38	0.40	0.69	0.68	0.37	0.51	1.35	0.47
	Intel 100Ω	CH23	1.50	1.46	1.33	1.19	1.46	1.24	1.27	1.10	1.85	1.79	1.60	1.50	1.75	1.64	1.51	1.52	0.73	0.41	0.46	0.22	0.37	0.17	0.29	0.00	1.02	0.90	0.54	0.74	0.78	0.62	0.65	0.15	1.59	0.67
		CH24	1.57	1.43	1.03	1.19	1.38	1.23	1.19	0.77	1.50	1.75	1.44	1.37	1.61	1.24	1.17	1.35	0.68	0.59	0.22	0.29	0.47	0.34	0.26	0.00	0.76	0.91	0.58	0.60	0.73	0.54	0.43	0.47	1.56	0.66
		CH25	2.00	1.56	1.72	1.48	1.44	1.46	1.66	1.15	2.27	2.09	2.04	1.93	2.13	1.66	1.90	1.75	1.02	0.41	0.65	0.46	0.71	0.26	0.62	0.00	1.07	1.12	0.88	0.93	1.01	0.53	0.71	0.75	1.94	0.94
	Intel 85Ω	CH38	1.59	1.36	1.04	1.06	1.42	1.34	1.28	0.83	1.56	1.77	1.64	1.43	1.63	1.34	1.42	1.52	0.66	0.26	0.25	0.12	0.51	0.32	0.32	0.00	0.93	0.92	0.76	0.65	0.89	0.74	0.71	0.58	1.60	0.69
		CH39	1.81	1.58	1.27	1.29	1.11	1.35	1.34	1.02	1.71	1.93	1.70	1.58	1.58	1.43	1.42	1.48	0.86	0.67	0.15	0.33	0.60	0.49	0.38	0.00	0.72	1.06	0.73	0.57	0.83	0.58	0.42	0.55	1.70	0.81
		CH40	1.59	1.20	1.33	0.95	1.45	1.08	1.36	0.96	1.89	1.64	1.71	1.12	1.67	1.41	1.21	1.42	0.71	0.22	0.43	0.03	0.48	0.10	0.41	0.00	0.98	0.80	0.49	0.63	0.83	0.66	0.76	0.54	1.54	0.70

- ΔCOM_B = COM_B minus the worst COM_B in the 34 Test Cases for the same channel.

Worst COM_A vs Worst COM_B (typ Zc=100Ω)

- Worst COM_B is worse than worst COM_A by up to 0.51dB
- COM_C is better than worst COM_A by up to 0.10dB



Worst COM_A vs Worst COM_B (typ Zc=100Ω)

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- Worst COM_B is worse than worst COM_A by up to
  - 0.10dB for 10dB loss, 0.51dB for 20dB loss, 0.23dB for 30dB loss
- COM_C is better than worst COM_A by up to
  - 0.10dB for 10dB loss, 0.06dB for 20dB loss, 0.00dB for 30dB loss

Loss	Channel Type	CH #	Worst Test Case of COM_A									Worst Test Case of COM_B										Difference	
			TC #	zp	Tx Rd	Tx Zc	Av,Afe	Ane	Rx Rd	Rx Zc	COM_A	TC #	zp	Tx Rd	Tx Zc	Av,Afe	Ane	Rx Rd	Rx Zc	COM_B	COM_C (Re-optimized LE)	COM_B - COM_A	COM_C - COM_A
10dB	Cisco	CH1	TC11	12	55	90	0.436	0.642	55	90	5.31	TC11	12	55	90	0.436	0.642	55	90	5.31	5.31	0.00	0.00
	TE	CH4	TC32	30	55	110	0.436	0.642	55	110	6.51	TC24	30	45	110	0.394	0.581	55	110	6.45	6.53	-0.06	0.02
	Intel 100Ω	CH8	TC22	30	45	110	0.394	0.581	45	110	4.58	TC22	30	45	110	0.394	0.581	45	110	4.51	4.58	-0.07	0.00
		CH11	TC22	30	45	110	0.394	0.581	45	110	4.88	TC32	30	55	110	0.436	0.642	55	110	4.86	4.98	-0.03	0.10
		CH12	TC6	12	45	110	0.394	0.581	45	110	3.86	TC22	30	45	110	0.394	0.581	45	110	3.79	3.88	-0.07	0.02
	Intel 85Ω	CH13	TC6	12	45	110	0.394	0.581	45	110	6.32	TC6	12	45	110	0.394	0.581	45	110	6.22	6.32	-0.10	0.00
		CH17	TC22	30	45	110	0.394	0.581	45	110	5.89	TC22	30	45	110	0.394	0.581	45	110	5.82	5.89	-0.08	0.00
		CH18	TC14	12	55	110	0.436	0.642	45	110	5.37	TC14	12	55	110	0.436	0.642	45	110	5.29	5.37	-0.08	0.00
20dB	Cisco	CH19	TC24	30	45	110	0.394	0.581	55	110	5.27	TC19	30	45	90	0.394	0.581	55	90	5.18	5.34	-0.10	0.06
	TE	CH23	TC24	30	45	110	0.394	0.581	55	110	4.54	TC24	30	45	110	0.394	0.581	55	110	4.03	4.54	-0.51	0.00
	Intel 100Ω	CH24	TC22	30	45	110	0.394	0.581	45	110	5.22	TC22	30	45	110	0.394	0.581	45	110	5.10	5.22	-0.13	0.00
		CH25	TC24	30	45	110	0.394	0.581	55	110	4.88	TC24	30	45	110	0.394	0.581	55	110	4.85	4.88	-0.03	0.00
		CH26	TC22	30	45	110	0.394	0.581	45	110	4.45	TC22	30	45	110	0.394	0.581	45	110	4.36	4.45	-0.09	0.00
	Intel 85Ω	CH27	TC24	30	45	110	0.394	0.581	55	110	6.09	TC24	30	45	110	0.394	0.581	55	110	6.00	6.09	-0.09	0.00
		CH28	TC24	30	45	110	0.394	0.581	55	110	5.61	TC24	30	45	110	0.394	0.581	55	110	5.53	5.61	-0.08	0.00
		CH32	TC22	30	45	110	0.394	0.581	45	110	5.32	TC22	30	45	110	0.394	0.581	45	110	5.24	5.32	-0.08	0.00
30dB	Cisco	CH33	TC20	30	45	90	0.394	0.581	55	110	2.46	TC20	30	45	90	0.394	0.581	55	110	2.44	2.46	-0.02	0.00
	TE	CH34	TC19	30	45	90	0.394	0.581	55	90	0.98	TC19	30	45	90	0.394	0.581	55	90	0.91	0.98	-0.08	0.00
	Intel 100Ω	CH38	TC24	30	45	110	0.394	0.581	55	110	2.01	TC24	30	45	110	0.394	0.581	55	110	1.98	2.01	-0.03	0.00
		CH39	TC24	30	45	110	0.394	0.581	55	110	1.92	TC24	30	45	110	0.394	0.581	55	110	1.82	1.92	-0.10	0.00
		CH40	TC24	30	45	110	0.394	0.581	55	110	1.68	TC24	30	45	110	0.394	0.581	55	110	1.46	1.68	-0.22	0.00
	Intel 85Ω	CH41	TC24	30	45	110	0.394	0.581	55	110	2.70	TC24	30	45	110	0.394	0.581	55	110	2.65	2.70	-0.05	0.00
		CH42	TC24	30	45	110	0.394	0.581	55	110	2.42	TC24	30	45	110	0.394	0.581	55	110	2.19	2.42	-0.23	0.00
		CH43	TC24	30	45	110	0.394	0.581	55	110	2.37	TC24	30	45	110	0.394	0.581	55	110	2.37	2.37	0.00	0.00

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Summary and Proposal

Summary

- Typ Zc = 93Ω
  - Worst COM_B is worse than worst COM_A by up to
    - 0.46dB for 10dB loss, 0.28dB for 20dB loss, 0.19dB for 30dB loss
  - COM_C is better than worst COM_A by up to
    - 0.06dB for 10dB loss, 0.39dB for 20dB loss, 0.01dB for 30dB loss
- Typ Zc = 100Ω
  - Worst COM_B is worse than worst COM_A by up to
    - 0.10dB for 10dB loss, 0.51dB for 20dB loss, 0.23dB for 30dB loss
  - COM_C is better than worst COM_A by up to
    - 0.10dB for 10dB loss, 0.06dB for 20dB loss, 0.00dB for 30dB loss

Proposal

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1. For each of OC1 and OC2, optimize LE parameters by
   A. Calculate FOM for all possible combinations of LE parameters
   B. Choose the LE parameters that maximize FOM

2. For each of TC1-32 and OC1-2, calculate COM_B with the LE parameters chosen for OC1 or OC2 that has the same zp as the test condition

3. For *the worst condition* chosen by COM_B, re-optimize LE parameters, and calculate COM_C
   - If the worst condition is same as OC1 or OC2, COM_C is same as COM_B

4. Choose *the better value* of COM_B or COM_C as final COM

Options (1/2)

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- Do we need step 3-4?
  a) Do all step 1-4
  b) Stop at step 2 to save computation time, because COM_B is often similar to COM_A

  - I think we should take (a) to earn some margin

- Step 4
  a) Choose the *better* value of COM_B or COM_C as final COM
  b) Choose the *worse* value of COM_B or COM_C as final COM

  - I think we should take (a), because COM should be the best value for the channel under test

Options (2/2)

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- Step 3
  a) Choose the worst condition from TC1-32 and OC1-2 with min COM_B
  b) Choose the worst condition from anywhere in the parameter space (any Rd and Zc within the spec range) by quadratic fitting of COM_B
  - (a) is simple, but may miss the actual worst condition
  - (b) may be more robust, but needs more study and more document work
    - E.g. fitting may have to be done separately for zp=12mm and 30mm
  - I think (a) is OK, because COM is anyway imperfect
- Test Condition
  - For Rd and Zc, is max/min enough? Or, do we need max/typ/min?
    - If we use max/typ/min, we may need to use DoE, in particular for clause 136, because there are two more parameters of Tx PCB Zc and Rx PCB Zc.
  - For zp, do we need to keep 12mm? Or, can we drop zp=12mm?

Back up Slides

- The Other COM Parameters
- Channel Data Source

The Other COM Parameters

Table 93A-1 parameters			
Parameter	**Setting**	**Units**	**Information**
f_b	26.5625	GBd	
f_min	0.05	GHz	
Delta_f	0.01	GHz	
C_d	[1.8e-4 1.8e-4]	nF	[TX RX]
z_p select	[1]		[test cases to run]
z_p (TX)	[30]	mm	[test cases]
z_p (NEXT)	[12]	mm	[test cases]
z_p (FEXT)	[30]	mm	[test cases]
z_p (RX)	[30]	mm	[test cases]
C_p	[1.1e-4 1.1e-4]	nF	[TX RX]
R_0	50	Ohm	
R_d	[55 45]	Ohm	tdr selected
f_r	0.75	*fb	
c(0)	0.6		min
c(-1)	[-0.25:0.05:0]		[min:step:max]
c(-2)	[0:0.025:0.1]		[min:step:max]
c(1)	[-0.25:0.05:0]		[min:step:max]
g_DC	[-20:1:0]	dB	[min:step:max]
f_z	10.625	GHz	
f_p1	10.625	GHz	
f_p2	1.00E+99	GHz	
A_v	[0.39357 0.436]	V	tdr selected
A_fe	[0.39357 0.436]	V	tdr selected
A_ne	[0.5754 0.636]	V	tdr selected
L	4		
M	32		
N_b	12	UI	
b_max(1)	0.7		
b_max(2..N_b)	0.2		
sigma_RJ	0.01	UI	
A_DD	0.02	UI	
eta_0	1.64E-08	V^2/GHz	
SNR_TX	32.5	dB	tdr selected
R_LM	0.95		
DER_0	1.00E-04		
Operational control			
COM Pass threshold	3	dB	
Include PCB	0	Value	0, 1, 2
g_DC_HP	[-6:1:0]		[min:step:max]
f_HP_PZ	0.6640625	GHz	

I/O control		
DIAGNOSTICS	0	logical
DISPLAY_WINDOW	0	logical
Display frequency domain	1	logical
CSV_REPORT	1	logical
RESULT_DIR	.\results\V165_{date}\	
SAVE_FIGURES	0	logical
Port Order	[1 3 2 4]	
RUNTAG	v165_d1p0a	
Receiver testing		
RX_CALIBRATION	0	logical
Sigma BBN step	5.00E-03	V
IDEAL_TX_TERM	0	logical
T_r	1.20E-02	ns
FORCE_TR	1	logical

Non standard control options		
COM_CONTRIBUTION	0	logical

New 'cd exploratory		
TDR	1	logical
WC_PORTZ	0	logical
T_k	0.6	ns

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	[83.7 102.3]	Ohm (tdr sel)

Table 92–12 parameters		
Parameter	**Setting**	
board_tl_gamma0_a1_a2	[0 4.114e-4 2.547e-4]	
board_tl_tau	6.191E-03	ns/mm
board_Z_c	110	Ohm
z_bp (TX)	151	mm
z_bp (NEXT)	72	mm
z_bp (FEXT)	72	mm
z_bp (RX)	151	mm

Channel Data Source

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- Cisco Channels (CH1, CH4, CH8)
  - http://www.ieee802.org/3/cd/public/channel/Cisco_Backplane_channel_data.zip
  - CH1 (10.8dB), CH4 (20.9dB), CH8 (30.1dB)
  - 5 FEXT + 3 NEXT
- TE Channels (CH41, CH42, CH43)
  - http://www.ieee802.org/3/cd/public/channel/TEC_STRADAWhisper*.zip
  - CH41 (10.5dB), CH42 (21.8dB), CH43 (32.0dB)
  - 4 FEXT (F11F12,F17F18,H11H12,H17H18)
  - 4 NEXT (F14F15,G11G12,G17G18,H14H15)
- Intel 100Ω Channels (CH11-13, CH17-19, CH23-25)
  Intel 85Ω Channels (CH26-28, CH32-34, CH38-40)
  - http://www.ieee802.org/3/50G/public/channel/mellitz_01_021716_??dB_6_channels.zip
  - CH11-13/26-28(10dB), CH17-19/32-34(20dB), CH23-25/38-40(30dB)
  - CH11/17/23/26/32/38 (Nom), CH12/18/24/27/33/39 (HzLzHz), CH13/19/25/28/34/40 (LzHzLz)
  - 3 FEXT + 4 NEXT

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Thank you