

# Proposal for Optional Adaptation of TX FFE Tap Weights

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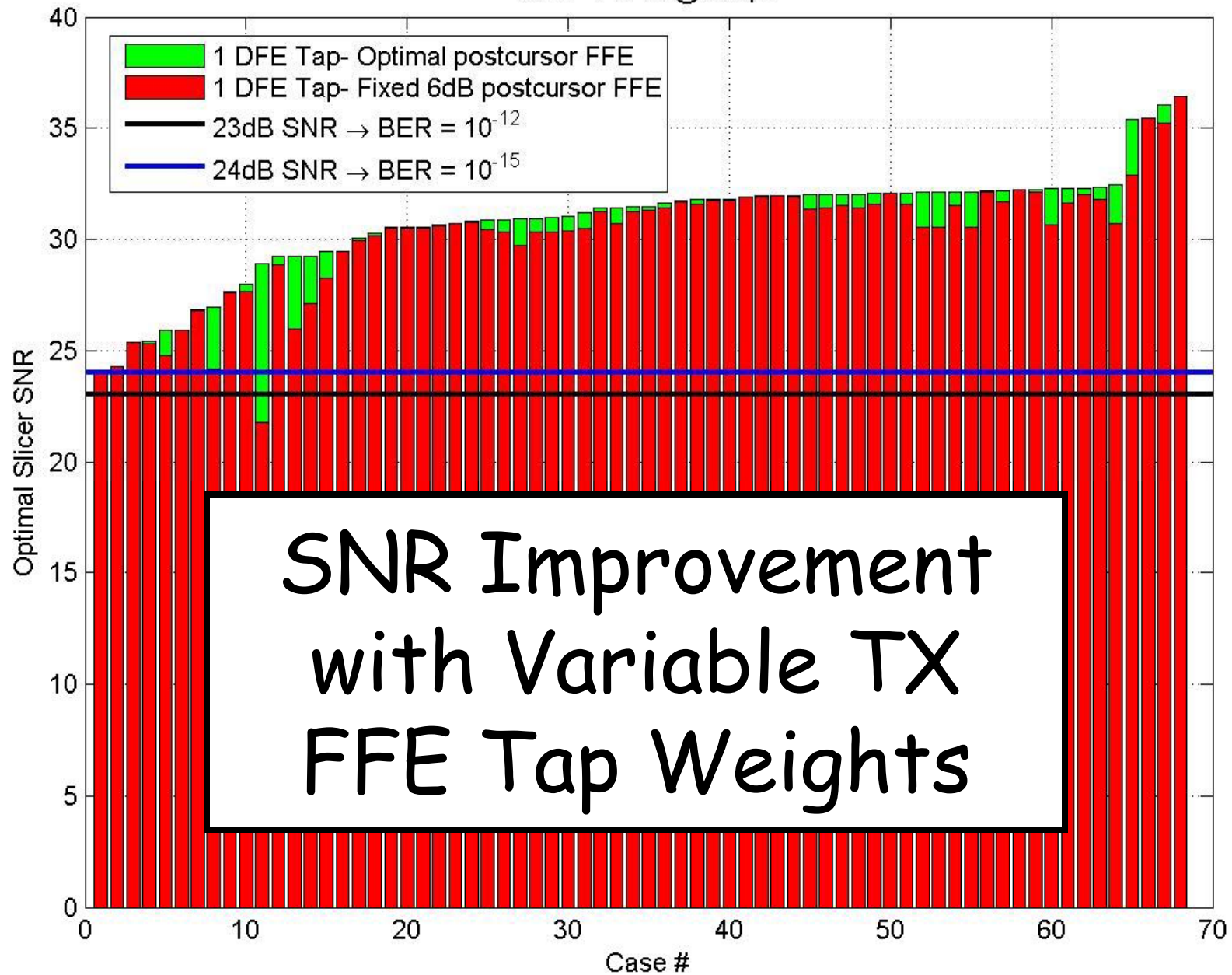
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LSI Logic

# Background

- RX control of TX tap weights has been proposed in *Start Up Training Sequence Proposal* ([T10/05-397r2](#))
- RX control of TX tap weights has also been proposed in 8GFC: *Proposal for Adaptive TX FFE* ([T11/06-114v0](#))
  - Proposal calls for *optional* control by RX and *optional* responses by TX
  - Intent is to put protocol mechanisms in place for future development

SAS → SAS @6Gbps



CASE	VICTIM	AGGRESSOR	CASE	VICTIM	AGGRESSOR
1	HP25	No Xtalk	35	HP08	HP15
2	HP24	No Xtalk	36	HP08	HP18
3	HP10	No Xtalk	37	HP07	HP16
4	HP26	No Xtalk	38	HP08	No Xtalk
5	TCTF SAS IT	No Xtalk	39	HP07	HP17
6	HP11	No Xtalk	40	HP07	HP15
7	HP12	HP20	41	HP02	HP16
8	T19in	No Xtalk	42	HP02	HP17
9	HP09	No Xtalk	43	HP02	HP15
10	HP13	HP21	44	HP07	HP18
11	T8in	No Xtalk	45	HP03	HP16
12	HP06	HP19	46	HP03	HP17
13	B8in	No Xtalk	47	HP05	HP16
14	TCTF SAS CT	No Xtalk	48	HP03	HP15
15	B19in	No Xtalk	49	HP05	HP17
16	HP01	HP19	50	HP02	HP18
17	HP08	HP19	51	HP05	HP15
18	HP07	HP19	52	HP04	HP16
19	HP01	HP16	53	HP04	HP17
20	HP01	HP17	54	HP03	HP18
21	HP01	HP15	55	HP04	HP15
22	HP01	HP18	56	HP07	No Xtalk
23	HP02	HP19	57	HP05	HP18
24	HP01	No Xtalk	58	HP02	No Xtalk
25	HP05	HP19	59	HP12	HP22
26	HP03	HP19	60	HP04	HP18
27	HP04	HP19	61	HP03	No Xtalk
28	HP06	HP16	62	HP13	HP23
29	HP06	HP17	63	HP05	No Xtalk
30	HP06	HP15	64	HP04	No Xtalk
31	HP06	HP18	65	TCTF SAS LowL	No Xtalk
32	HP08	HP16	66	Molex onemete	Molex onemete
33	HP06	No Xtalk	67	HP14	No Xtalk
34	HP08	HP17	68	Molex halimete	Molex halimete

# Proposal (1 of 2)

- Define protocol means for RX/TX communication to enable TX adaptation
- Specify this capability as *optional*
  - That is, either end of link may or may not participate. TX may ignore any such commands from RX & hold fixed setting.
- Specify that this capability must be able to be turned off

# Proposal (2 of 2)

- RX->TX communication:
  - Request increment or decrement of any FFE tap, with ability to address some large number of post- or pre-cursor taps with  $1T$  or  $\frac{1}{2} T$  spacing
  - Request TX reset to fixed spec tap weight(s)
- TX->RX communication:
  - Description of TX capabilities (# of pre- and post-cursor taps, tap spacing, tap weight ranges (or perhaps just notification that any tap weight is saturated at high or low limit))
  - Confirm reset to fixed spec tap weight(s)