

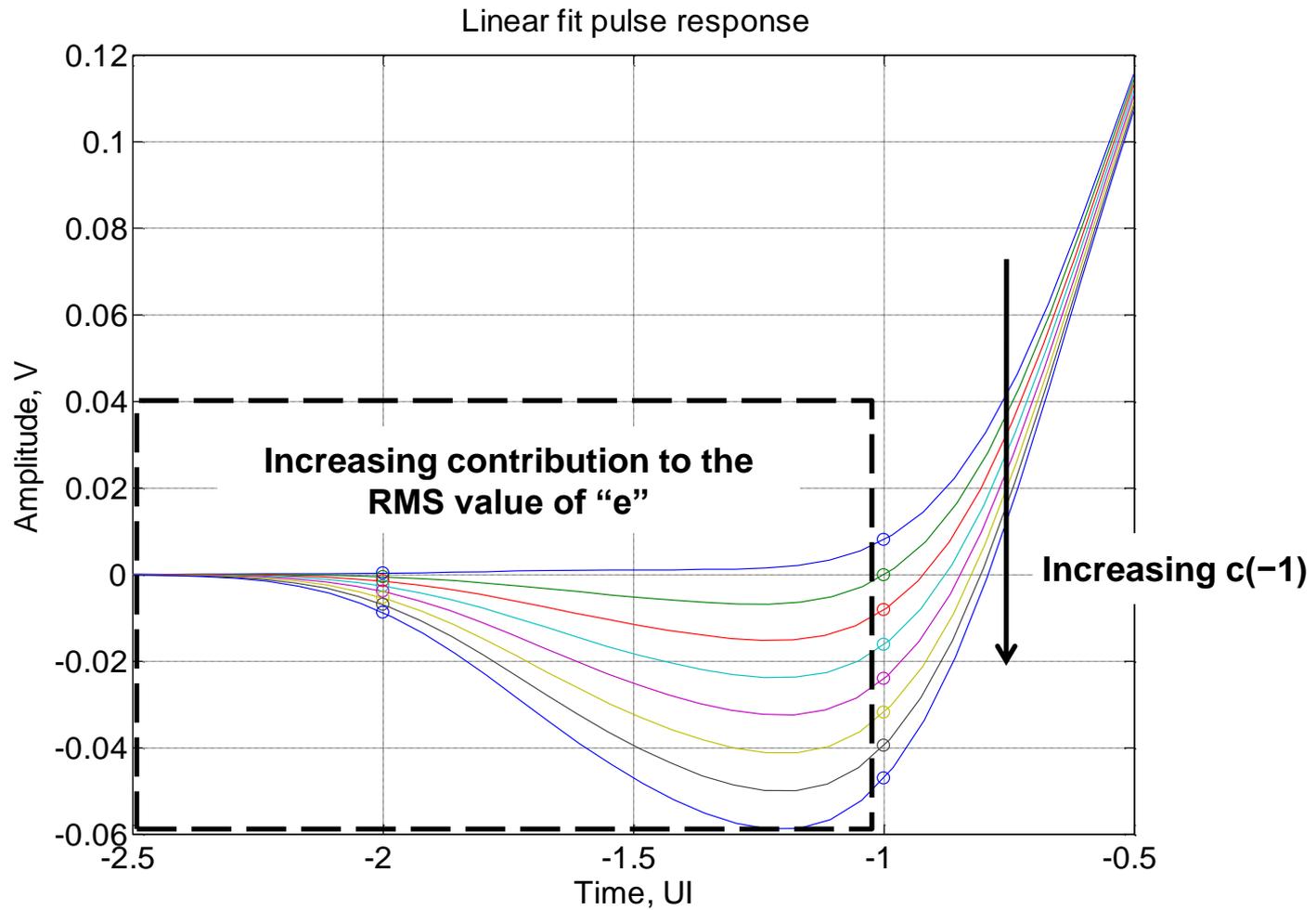
Clause 85 linear fit error

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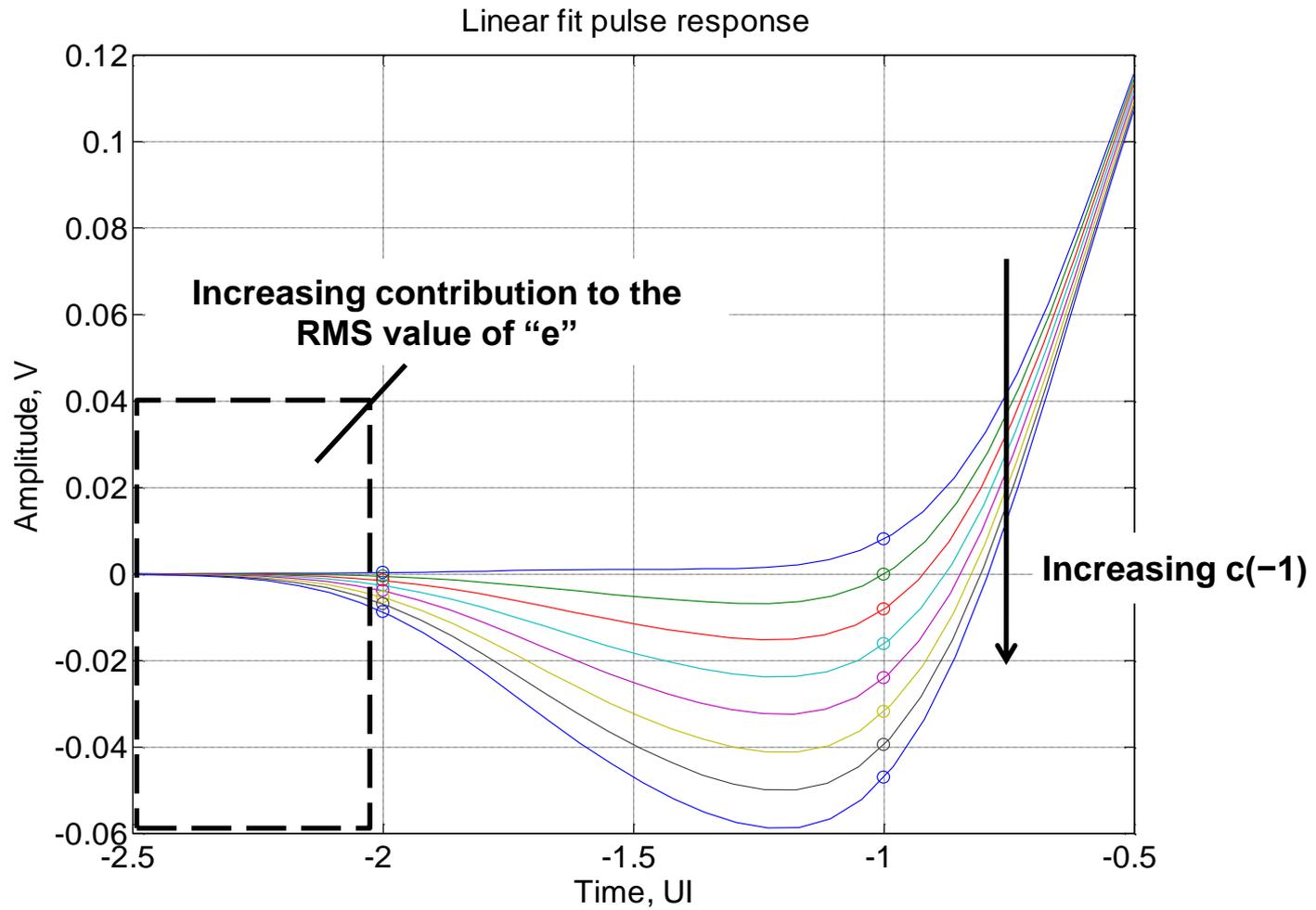
Problem statement

- 85.8.3.3 requires that the RMS value of the linear fit error, e , be less than the specified value (0.037) for each configuration of the transmit equalizer
 - P802d3REV_D2p0_section6.pdf, page 185, line 52
- Linear fit pulse values in the range $[-D_p, N_p - D_p - 1)$ unit intervals are excluded from linear fit error calculations
 - $D_p = 1$, $N_p = 7$ per Table 85-6
- Decreasing $c(-1)$ values (negative quantity) yield increasing “pre-shoot” in the linear fit pulse
 - Much of this pre-shoot occurs outside of the exception window defined by Table 85-6
- This pre-shoot incorrectly influences the linear fit error measurement
 - This may be remedied by changing the D_p and N_p values

Linear fit pulse with increasing $c(-1)$

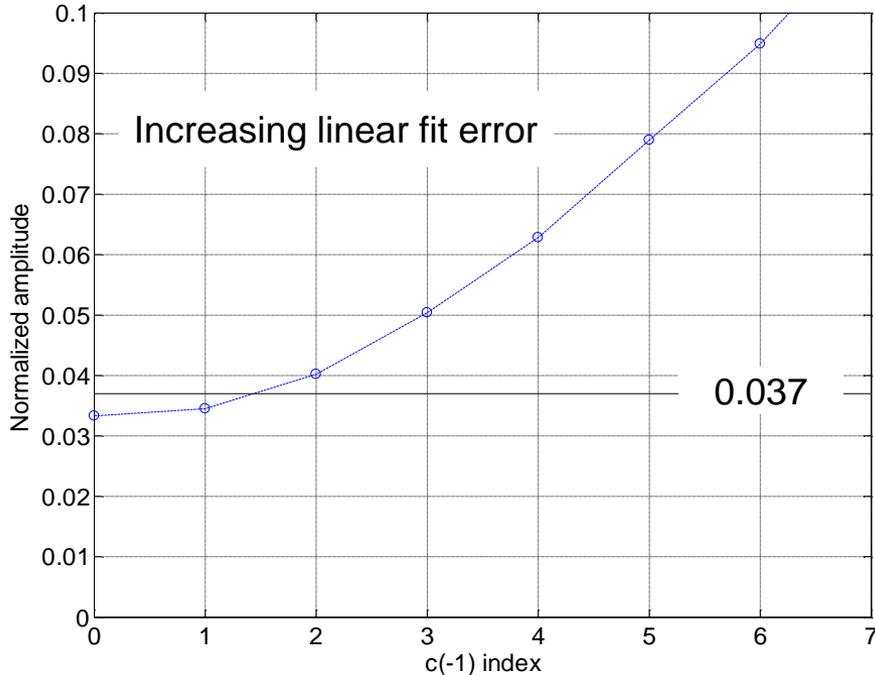


Change D_p from 1 to 2



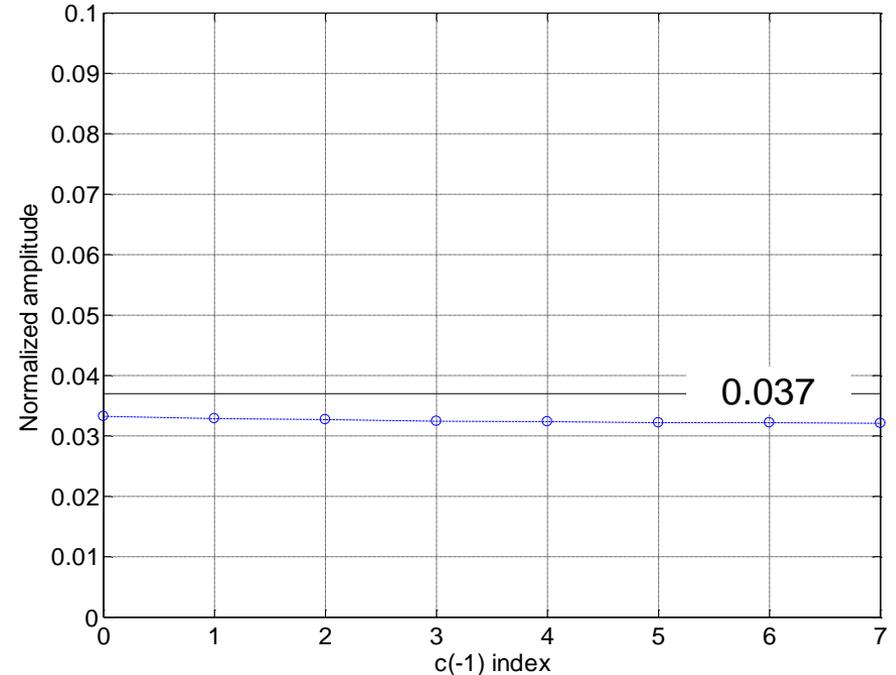
Linear fit error with increasing $c(-1)$

Linear fit error: $D_p = 1, N_p = 7$



$D_p = 1, N_p = 7$

Linear fit error: $D_p = 2, N_p = 8$



$D_p = 2, N_p = 8$

- Linear fit error limit may be fairly applied across all equalizer settings with a minor change to the D_p and N_p values

Proposed change

- In Table 85-6, change D_p to 2 and N_p to 8

Impact of the proposed change

- The increase in linear fit error due to increasing pre-shoot does not represent an actual link impairment
 - Result of over-compensating the transmitter host channel
 - More negative $c(-1)$ values provisioned to compensate for the end-to-end channel e.g. transmitter and receiver host channels and cabling
 - 10GBASE-KR start-up protocol leveraged to tune the transmitter for best performance
 - Receivers unlikely to tune the transmitter to over-compensate the channel
- Impact on existing transmitters
 - Compliant transmitters can be expected to meet the new requirement
- Impact on existing channels and receivers
 - No change to channel or receiver requirements