



T e c h n o l o g y t o t h e C o r e

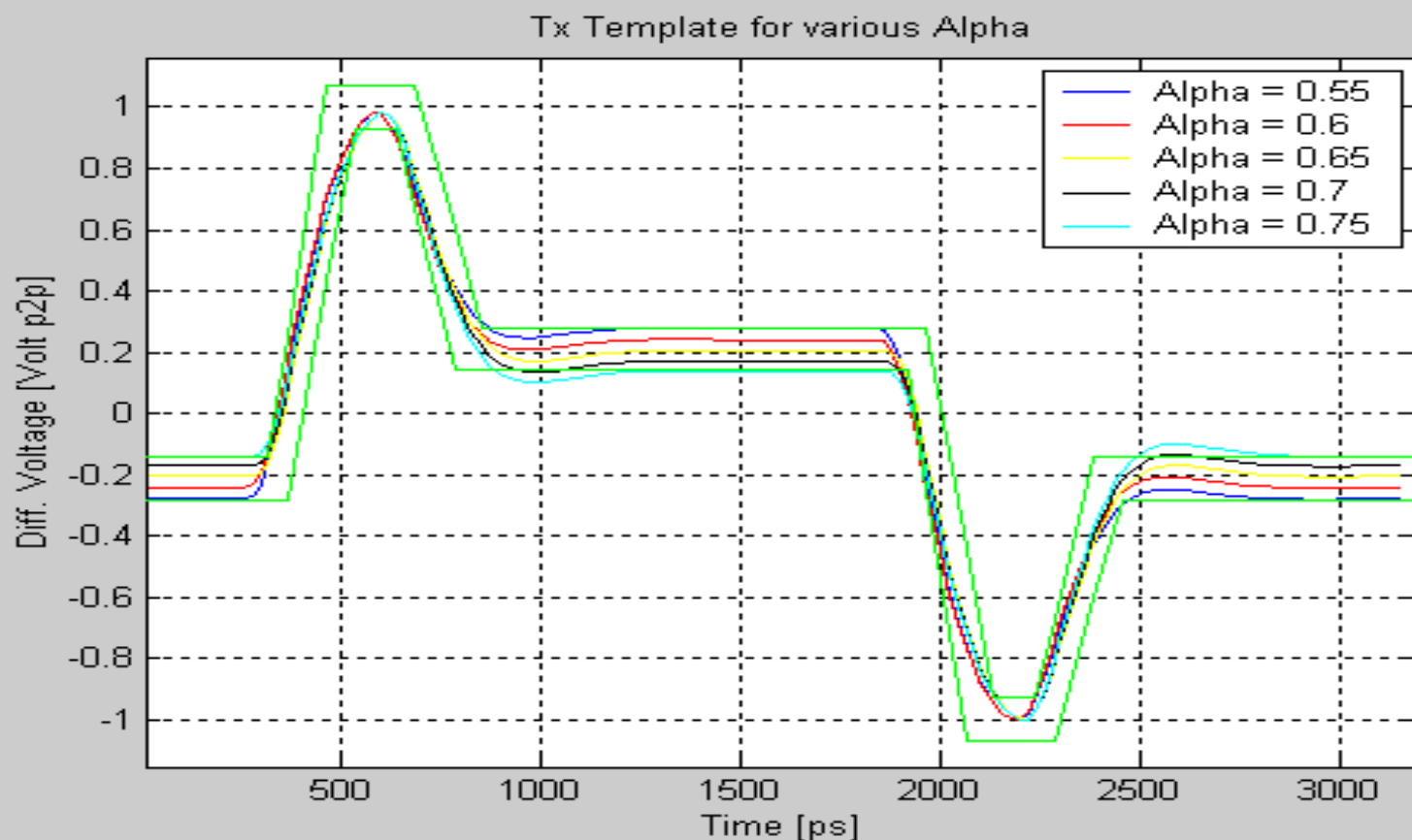
CX4 proposed Tx Template Issues

Ze'ev Roth, Dimitry Taich

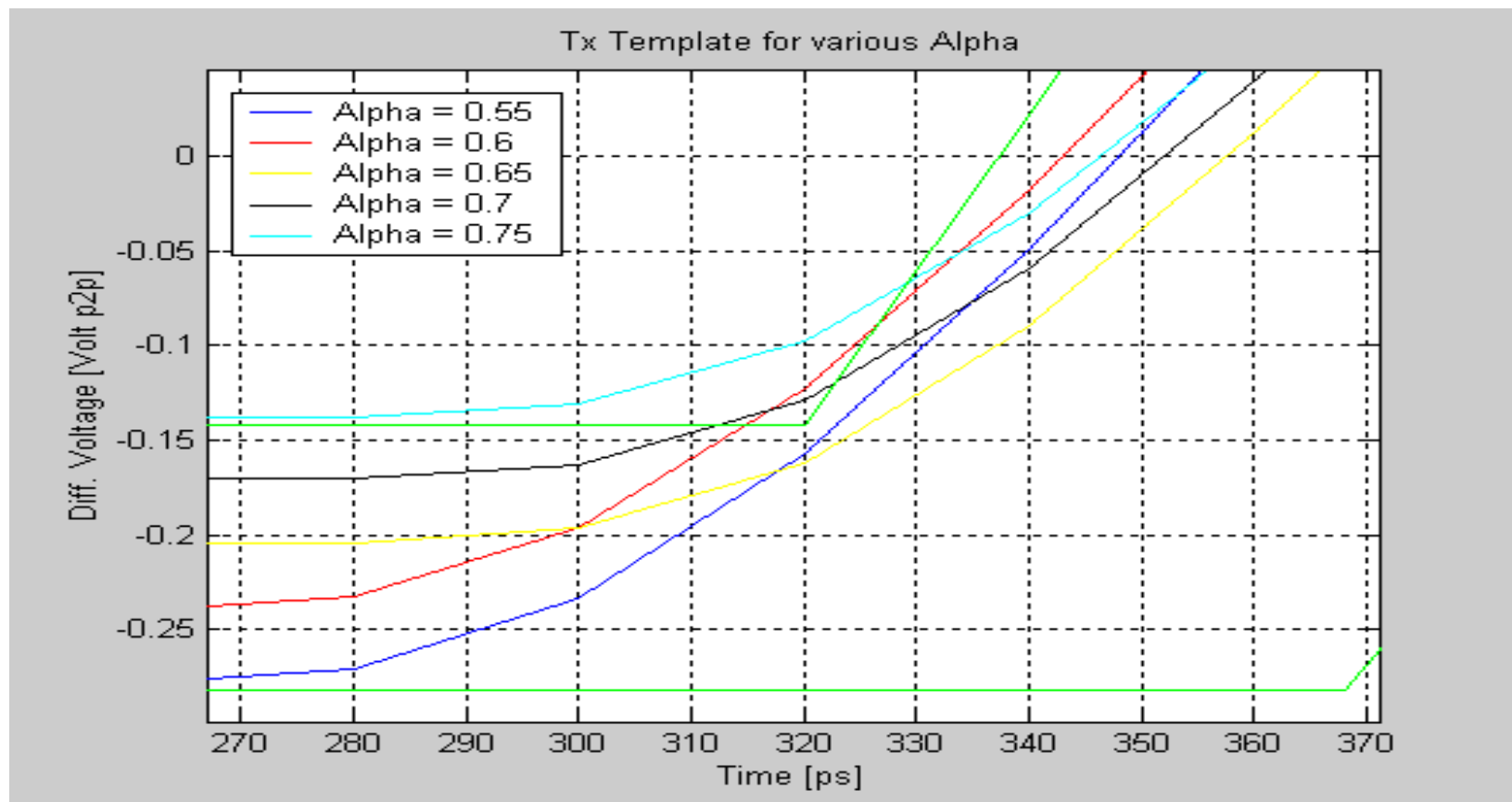
Overview

- Goal: study implication of Tx template
- Method: Simulate pattern 0111110000 through transmitter model:
 - 2nd order lpf with pole at 1.9GHz
 - Jitter (Random + deterministic < 0.35UI p2p)
- Test for range of supported Pre-emphasis values
- Notation:
 - Pre_emphasis filter: $y(n) = (x(n) - \alpha * x(n-1)) / (1 + \alpha)$
 - Pre_Emphasis = $(1 - \alpha) / (1 + \alpha)$
 - Computed $\alpha_{\text{nominal}} = 0.65$; Pre_emphasis = 79% (!) in CX4 accepted terminology
 - From template

Tx Template for Various Alpha

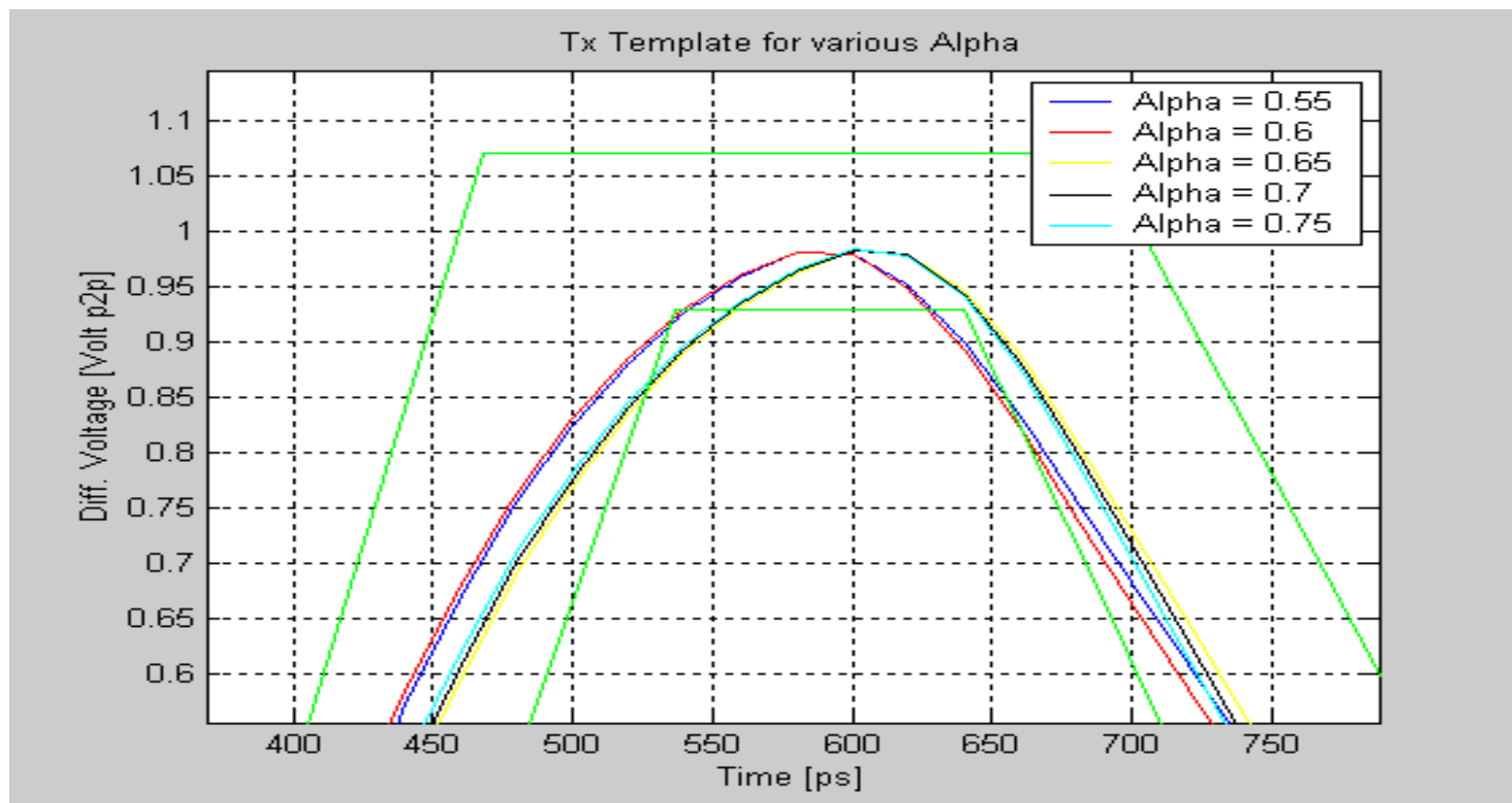


Zoom In on Initial Rise



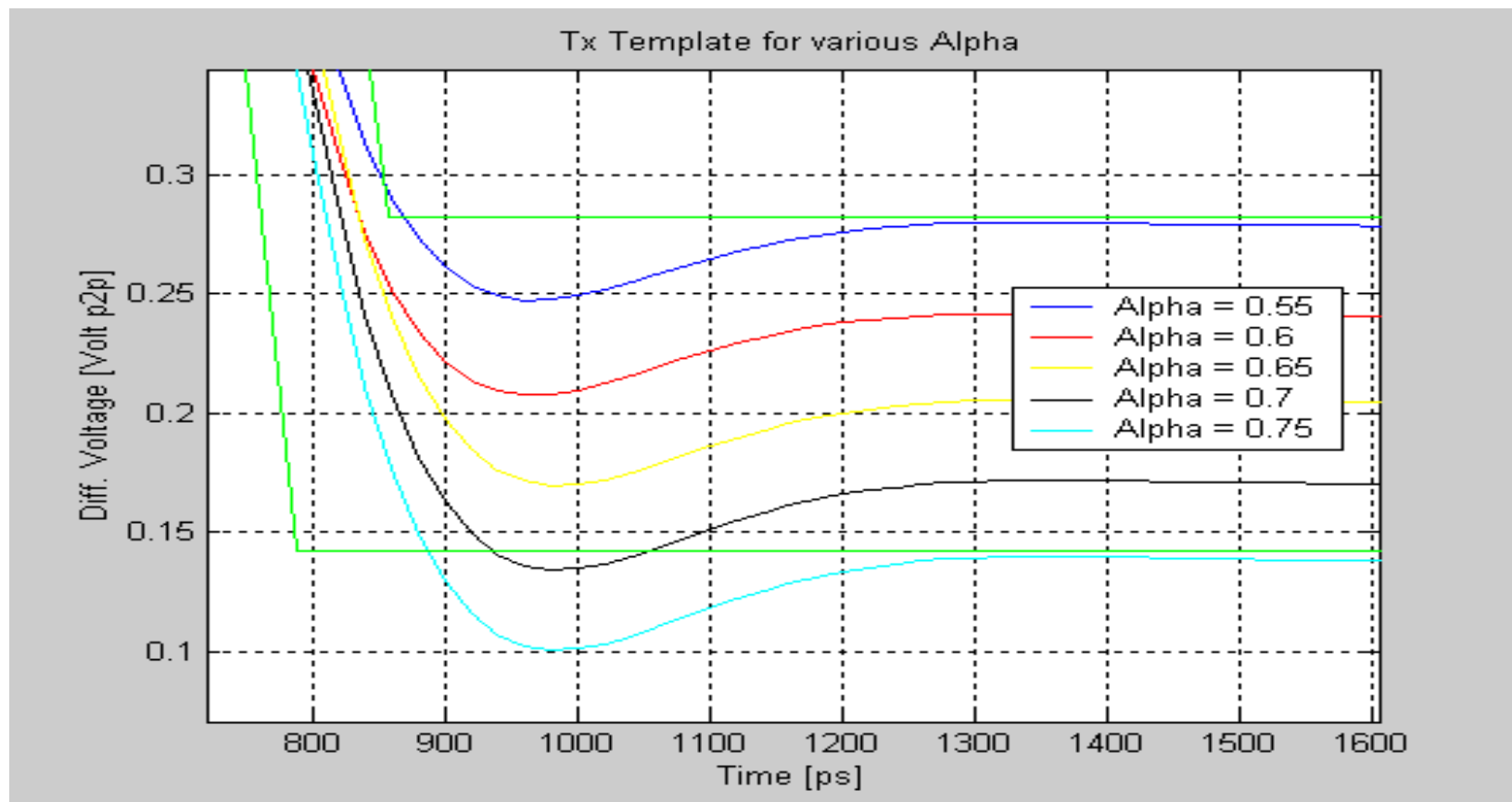
Only nominal (Alpha= 0.65) and Alpha=0.55 conform

Zoom In on Positive Peak



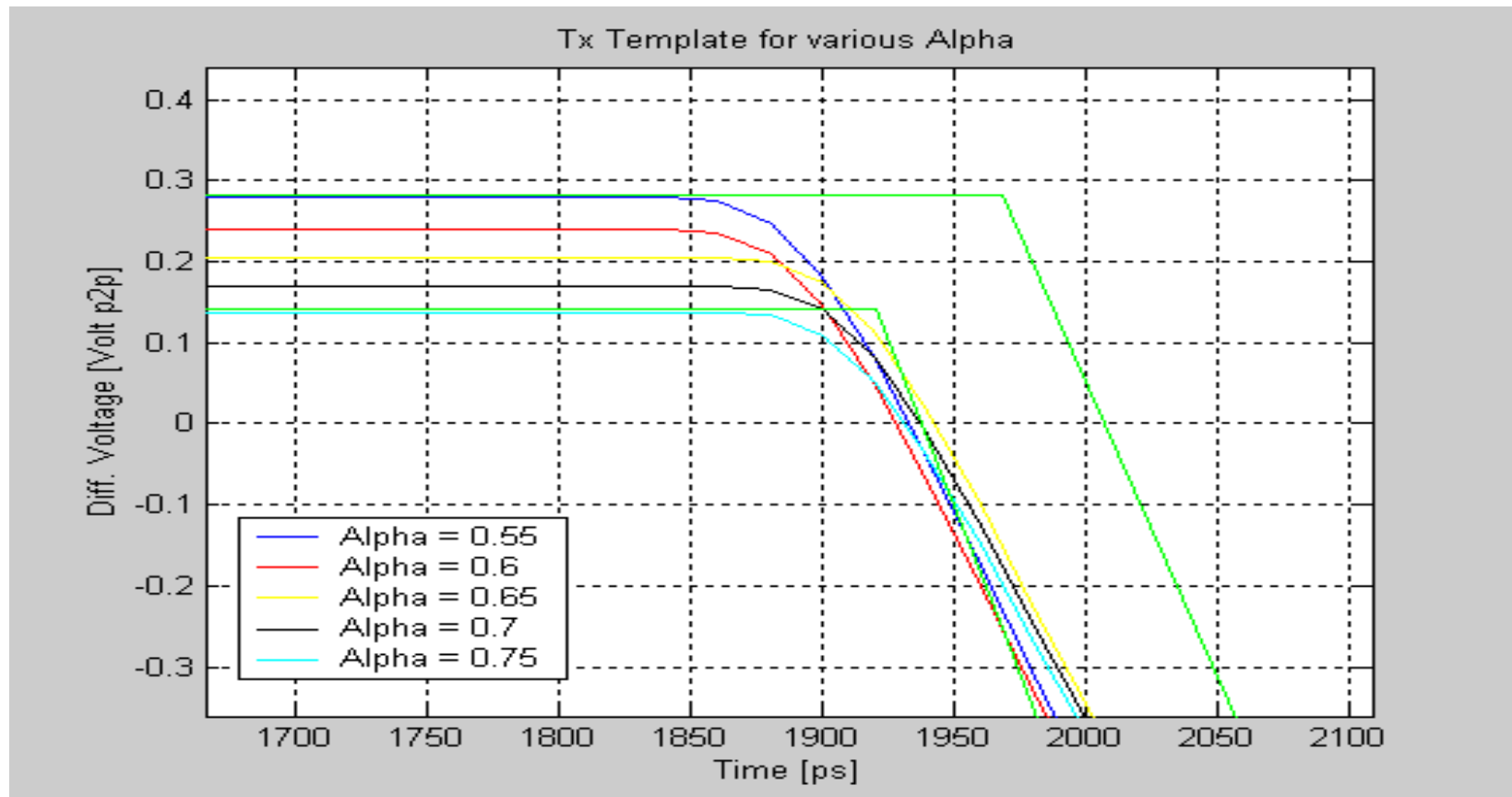
None of the values conform including the nominal 0.65

Zoom In on Positive Steady State



Only nominal (Alpha= 0.65) and Alpha=0.6 conform

Zoom In on Fall



None of the values conform including the nominal 0.65

Summary

- This template is not consistent
 - Even nominal value or pre-emphasis doesn't conform
- Template needs to be revised to accommodate:
 - Variations in Alpha
 - Variability of Tx LPF
 - Tx Jitter
- Perhaps rather than specifying the pre_emphasis at TX output directly we should aim to measure it indirectly at end of compliant channel