6G SAS Self-Consistency of Reference TX, Channel & RX

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RX Eye Height: Purpose & Typical values

- Ensuring positive RX input eye height provides margin for RX imperfections (noise, offsets, etc.)
- 275 to 375 mVppd for 3G SAS
- 150 mVppd proposed in 07-253r1 (Witt)
Eye Heights Reported in Other Presentations:

- 2dB TX, 3-tap DFE 07-227r0, Newman & Sanders

- 2dB TX, 3-tap DFE 07-253r1, Witt

65 mVppd from 1Vppd launch

67 mVppd from 1Vppd launch
Measured Eye Height

- ~2dB TX
- ~1Vppd launch
- 8.5 Gb/s
- 19dB channel loss @ 4.25G
RX ‘Sweet Spot’ vs. TX Amplitude

- Number of settings yielding BER < $10^{-12}$ drops quickly below ~800-1000 mVpp

- Conditions:
  - 8.5Gb/s & -19dB channel
  - Nominal PVT
  - No impairments
  - ~2dB de-emphasis
Summary & Proposal

- Ref TX+Ref Channel+Ref RX amplitude limited. 800mVppd Ref TX launch provides only 1/3rd of proposed 150mVppd eye height.
- Data confirms performance deteriorates below ~1000 mV TX peak amplitude.
- Proposal:
  - Increase Ref RX to 3-tap DFE, and
  - Increase REF TX amplitude to 1000 mVppd & 800 mVppd VMA (2dB de-emphasis)