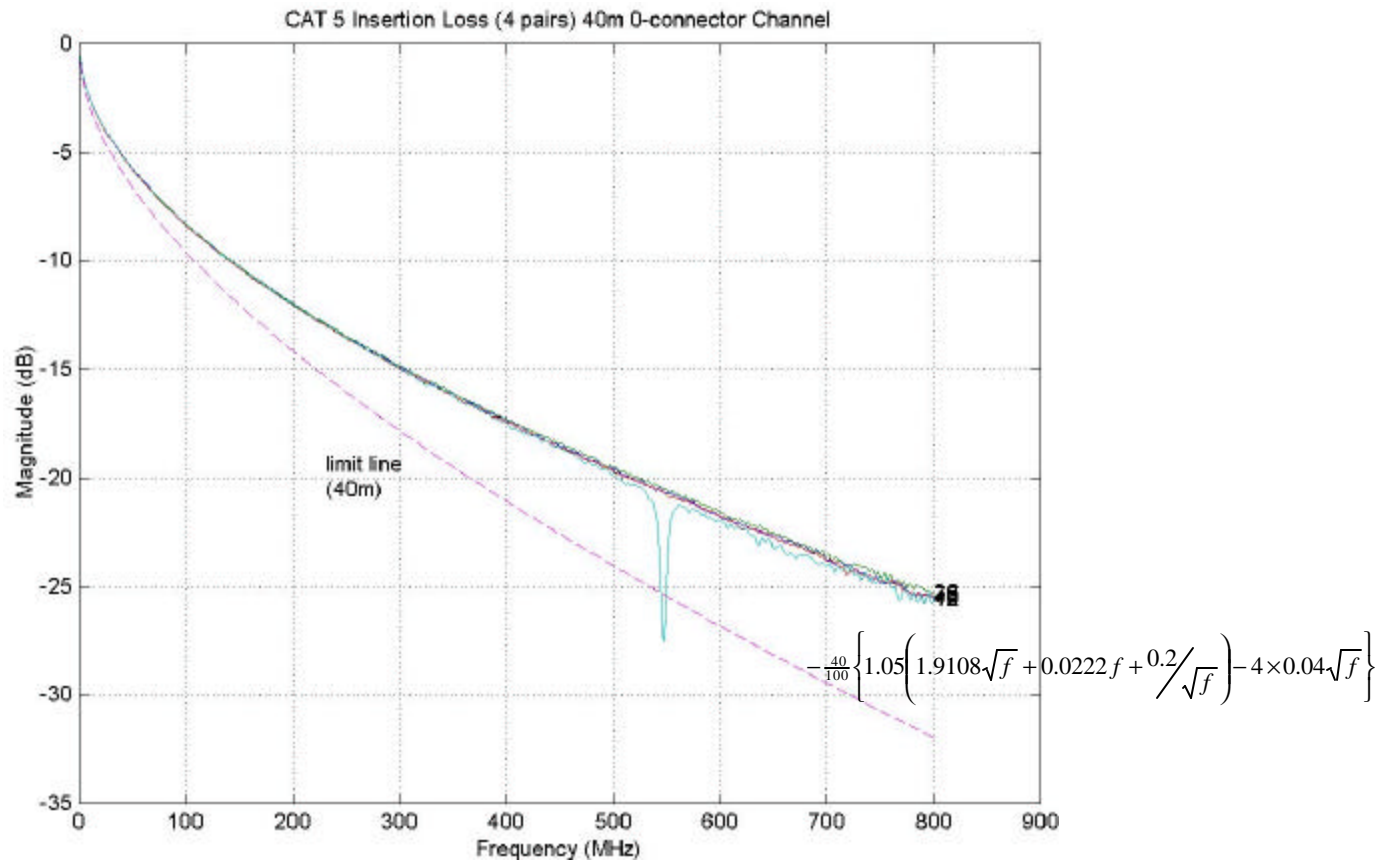


# Impact of Insertion Loss Notch on PAM-10 Transceiver

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# Cat 5e Insertion Loss

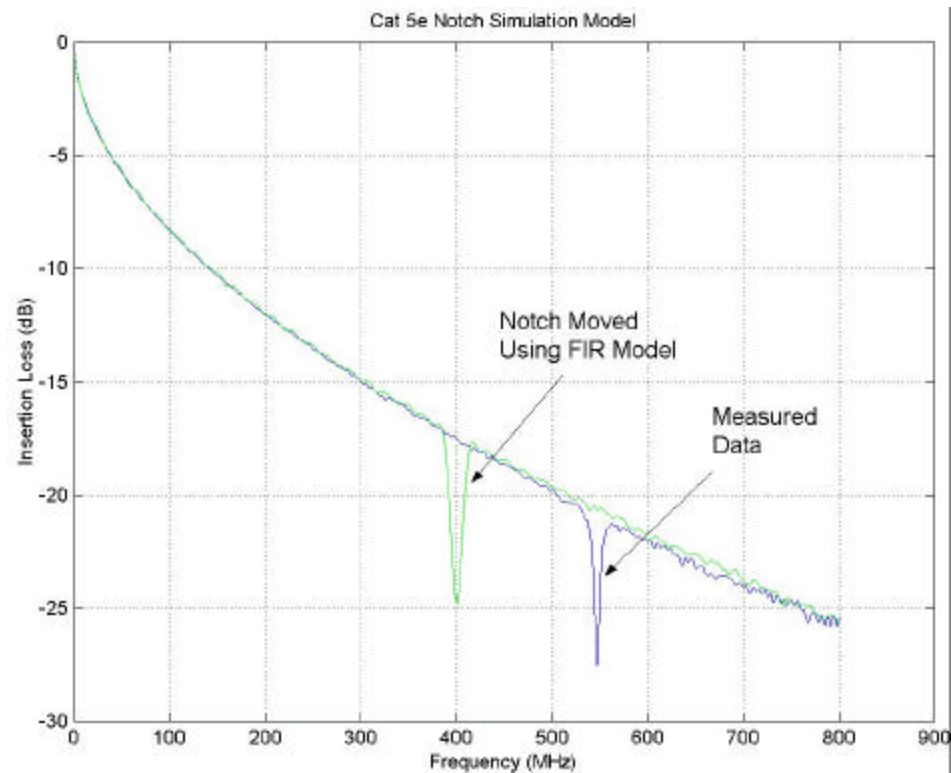
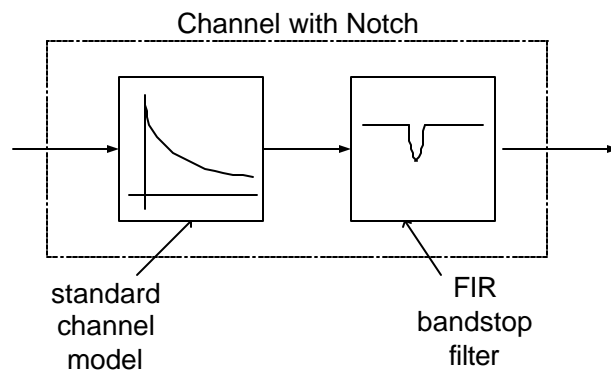
- **Cat 5e is specified to 100MHz**
  - Characteristics beyond 100MHz not guaranteed
  - Notches observed in insertion loss



# Simulated vs Modeled Notch

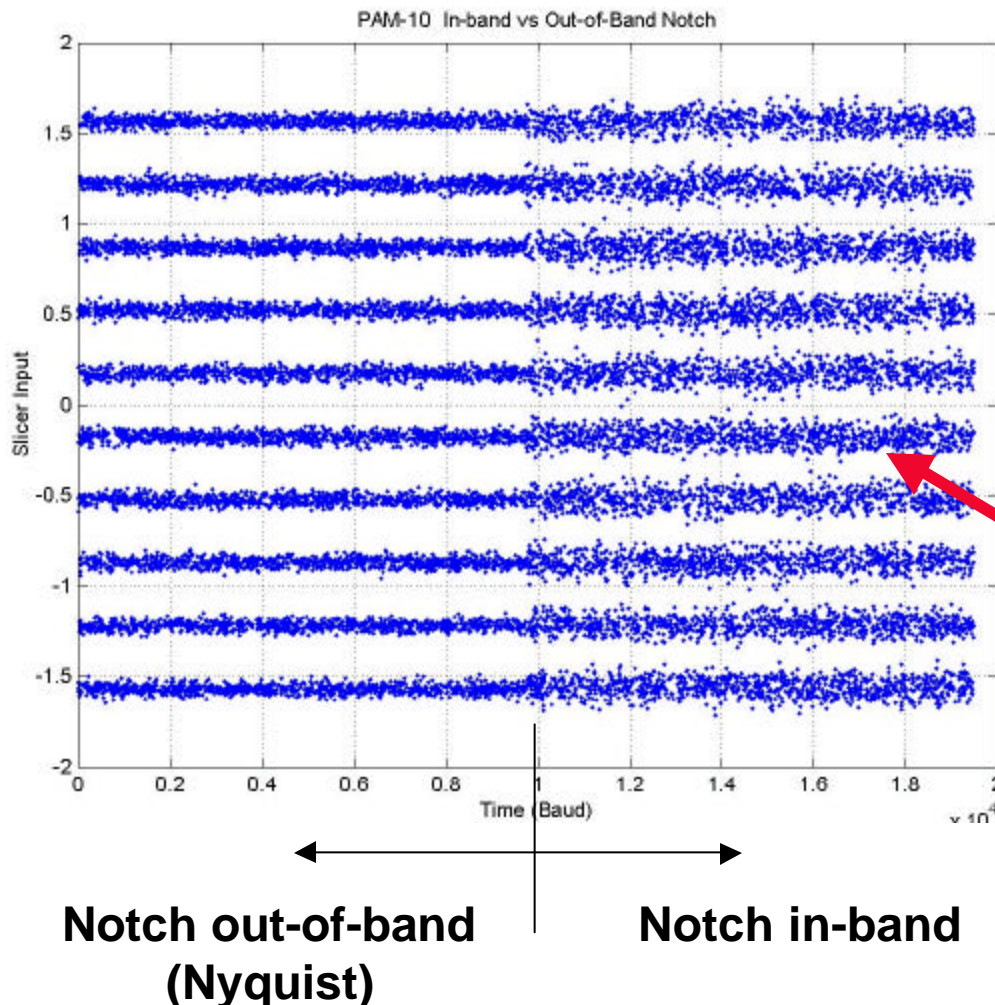
- **Model notch with FIR bandstop filter**

- Permits variable frequency location
- Permits variable notch depth



# Impact of Notch Frequency on PAM-10 Transceiver

- 8dB deep notch in insertion loss



-Equalizer re-converged after change in notch location

-Transient not shown

- Significant SNR degradation

# Impact of Notch Location and Depth on PAM Tranceiver

- PAM SNR degrades rapidly if notch is within Nyquist bandwidth
  - Degradation more rapid for deeper notch
  - Little to no impact on PAM if notch frequency is at least 20% higher than Nyquist

