XAUI Jitter and ISI Simulations

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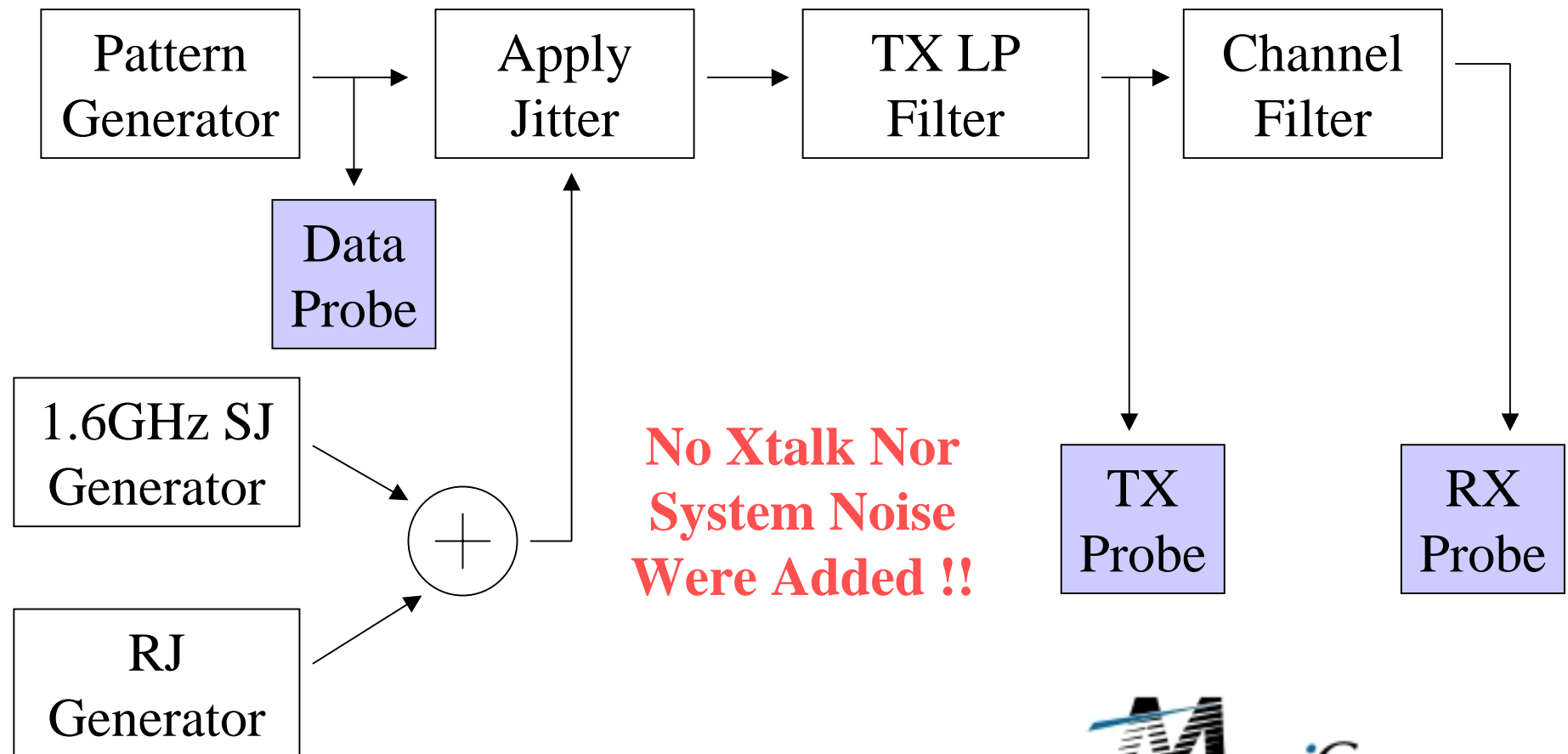
Agenda

- MATLAB simulations of XAUI Compliant Channel

- Check and compare to transmit and Receive Eye Masks

- Compare various Jitter Conditions

- Introducing a Killer Packet which maximize Jitter And Minimize Eye Pattern

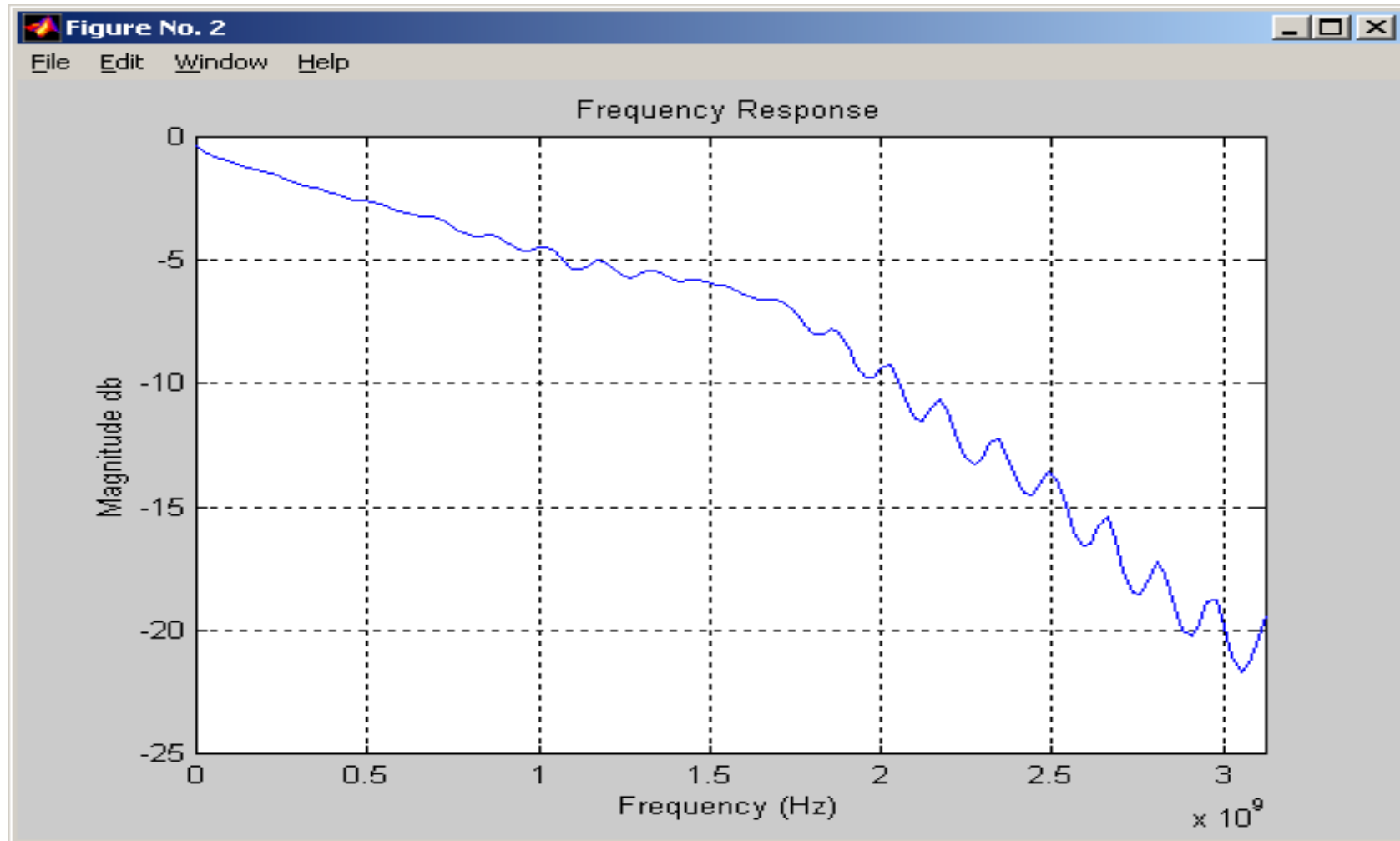- Propose possible Solutions

Simulating With The Worst Case S21 Proposed

No Xtalk Nor System Noise Were Added !!

Data Pattern Power Spectral Density

Random Data with short IPG (<=10)
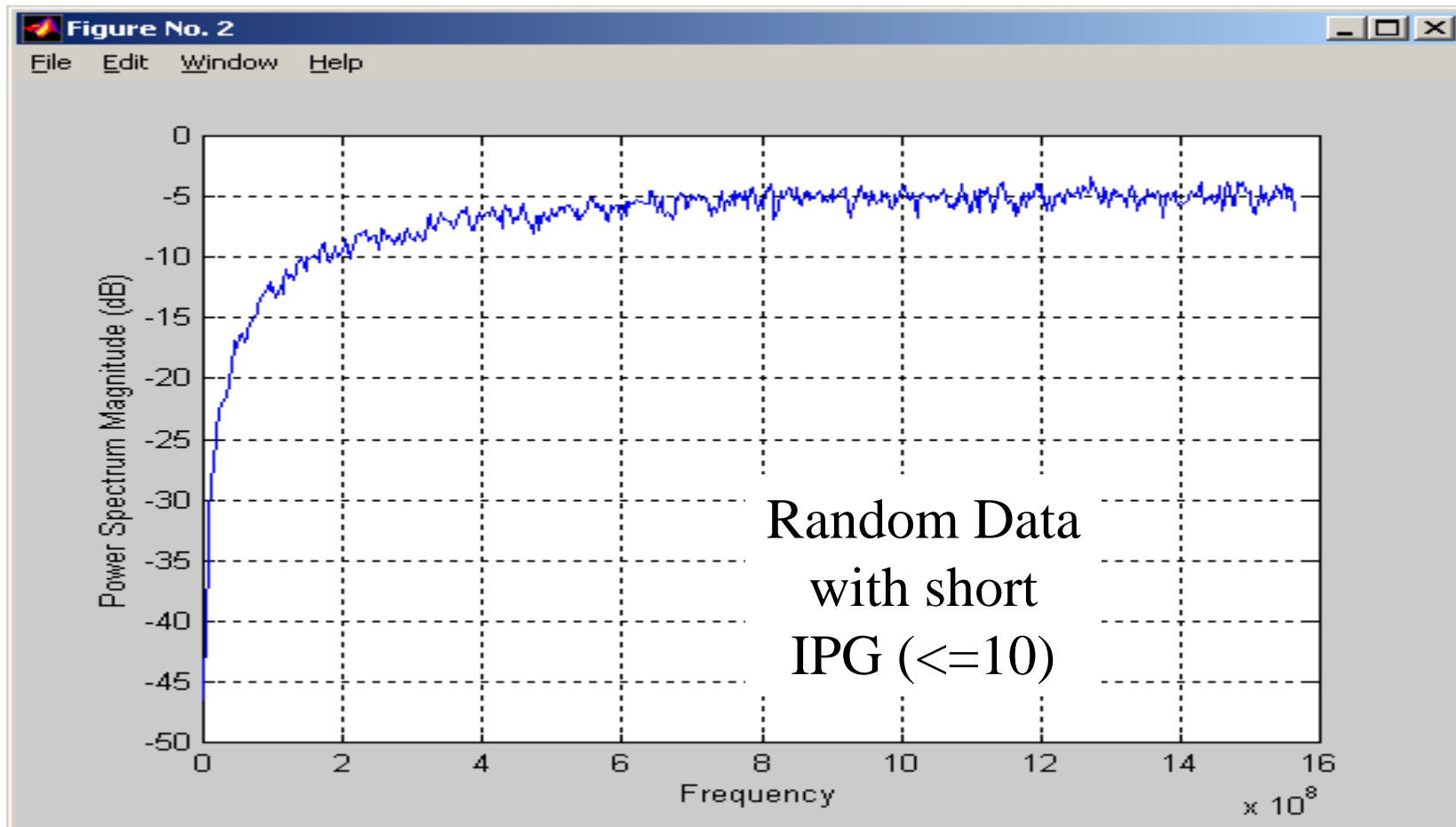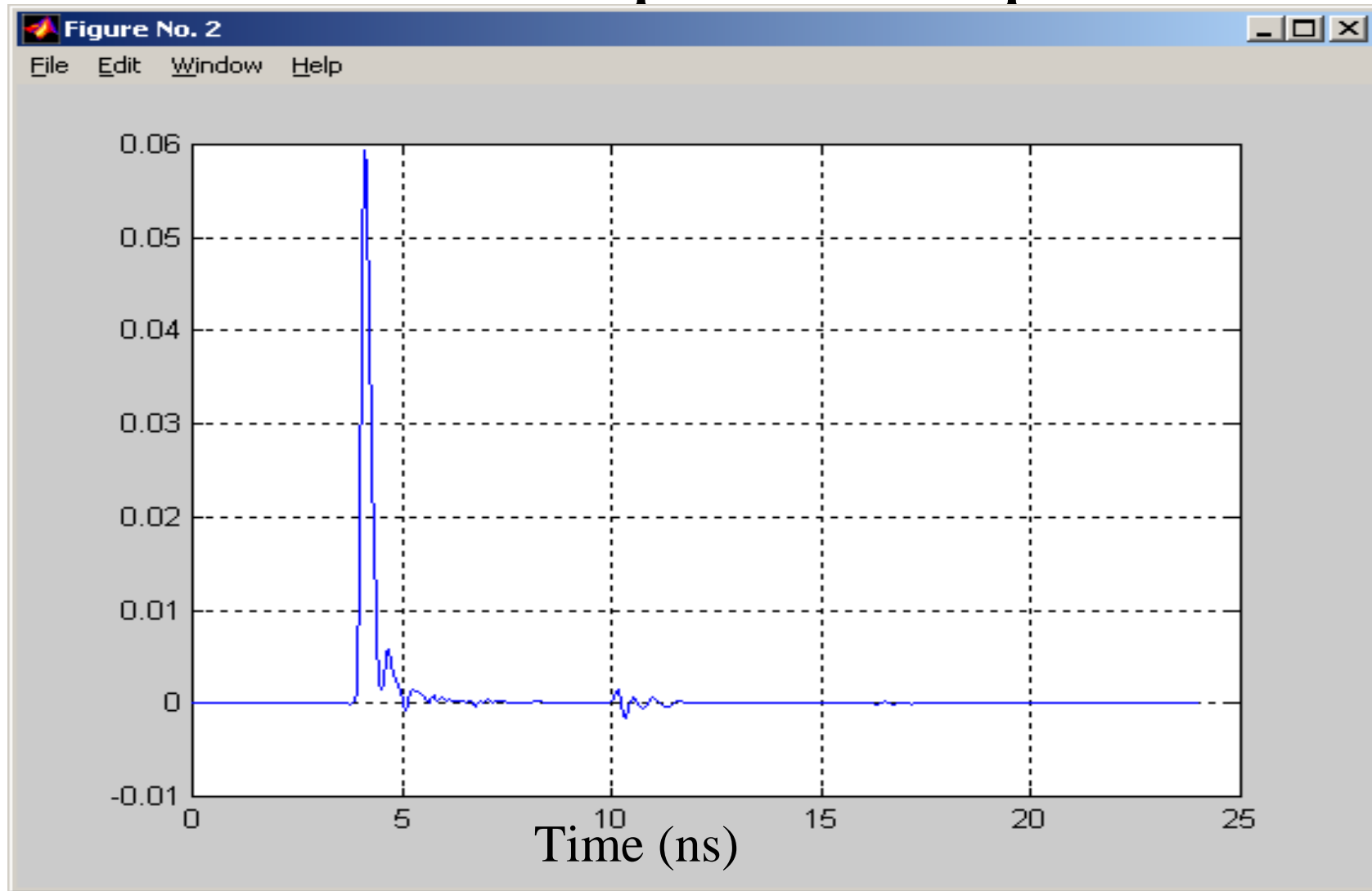
This is not the worst case kind of pattern !

Channel Frequency Response

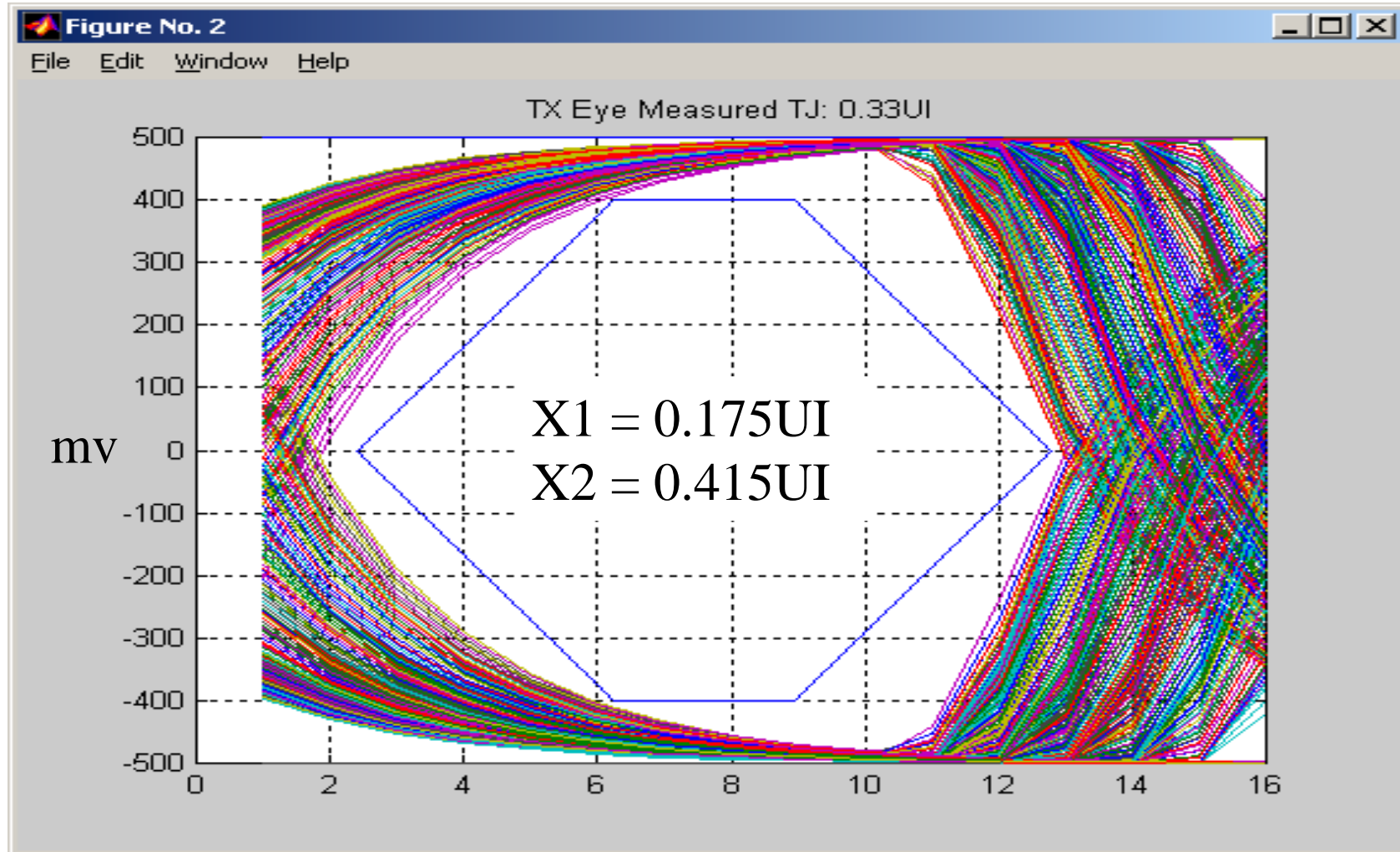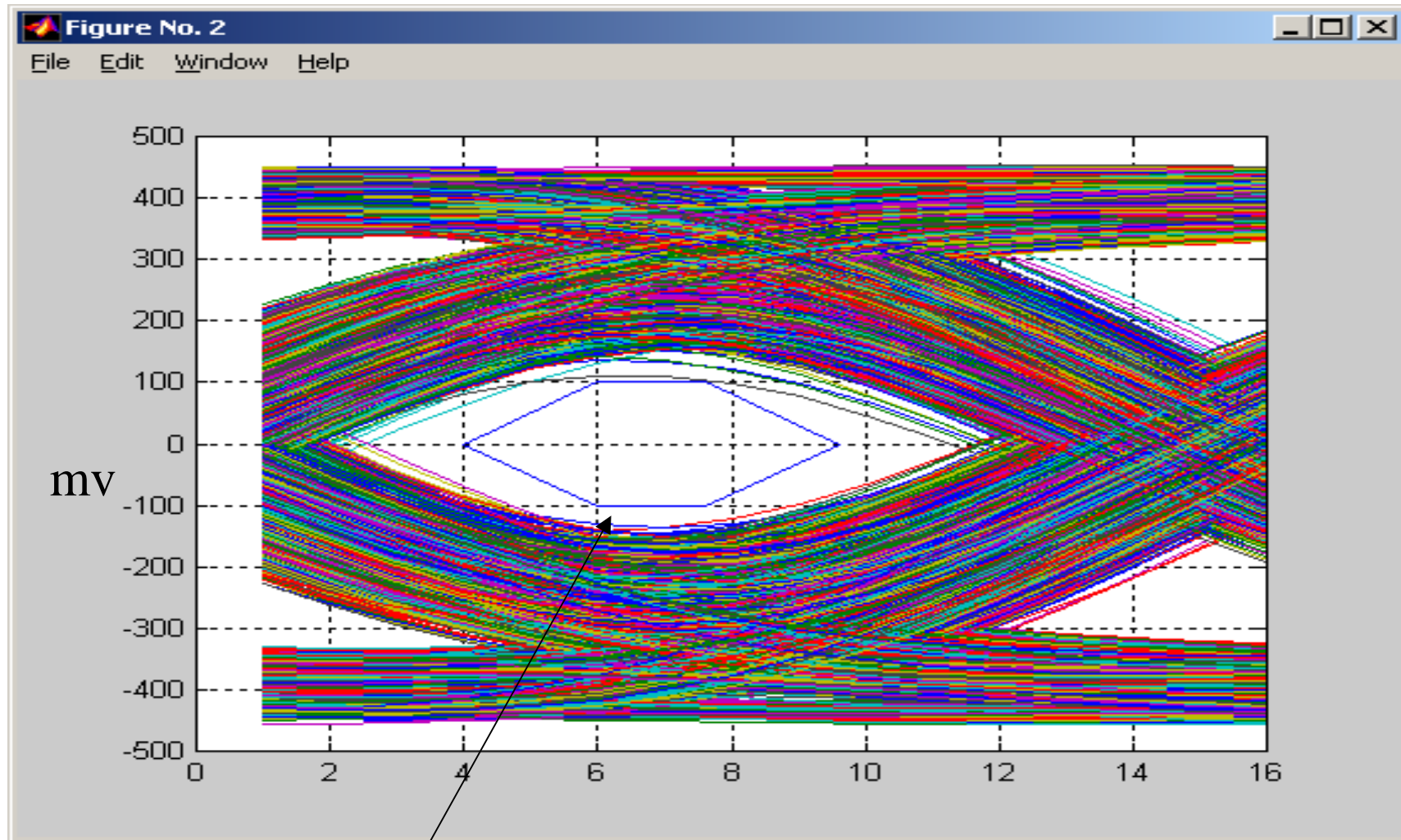Based on the file IEEE_CH_21_Final.txt
sent by Anthony 9th January 2001

Channel Impulse Response

TX Eye – Apply Only RJ: 0.35 UI

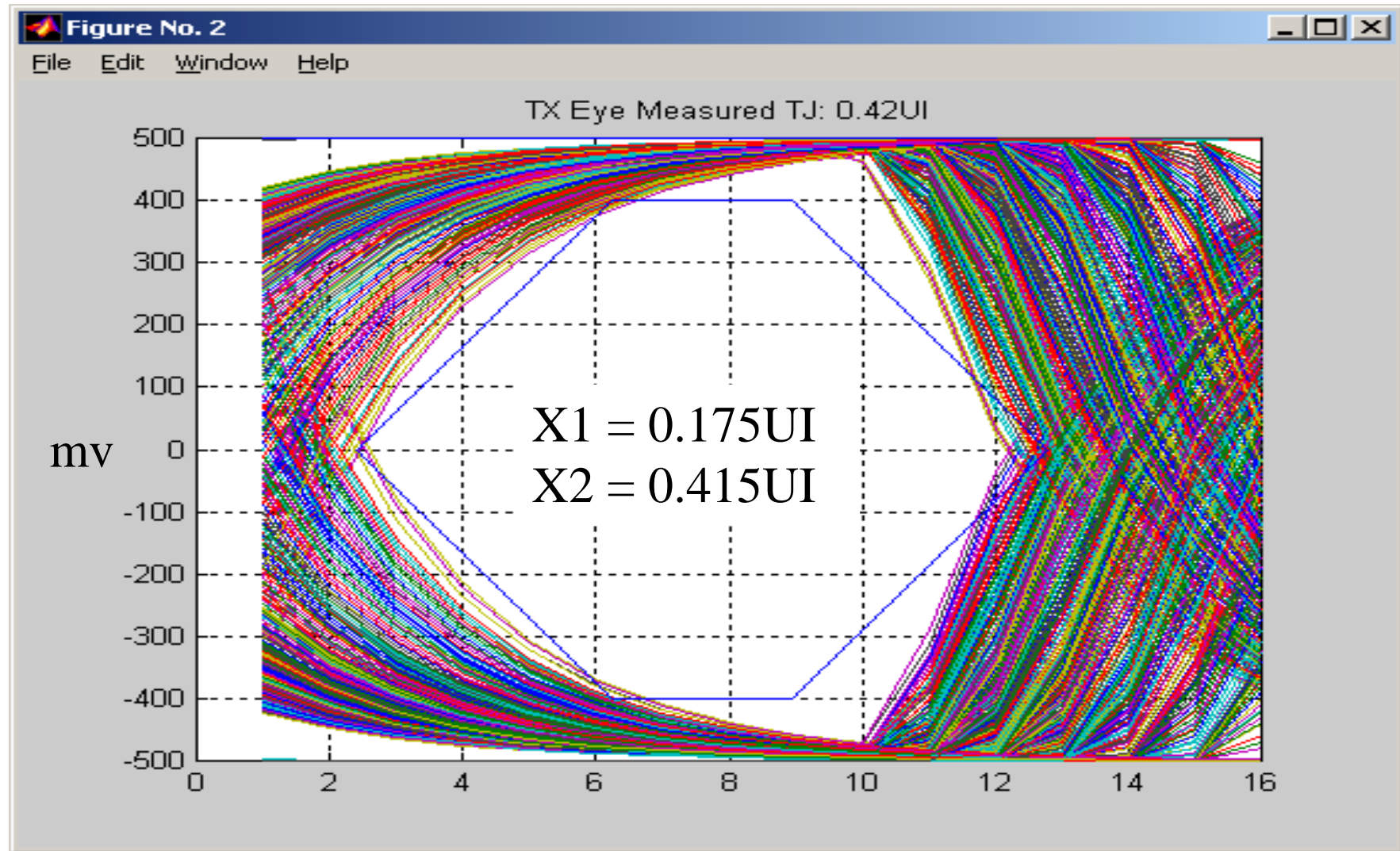# RX Eye
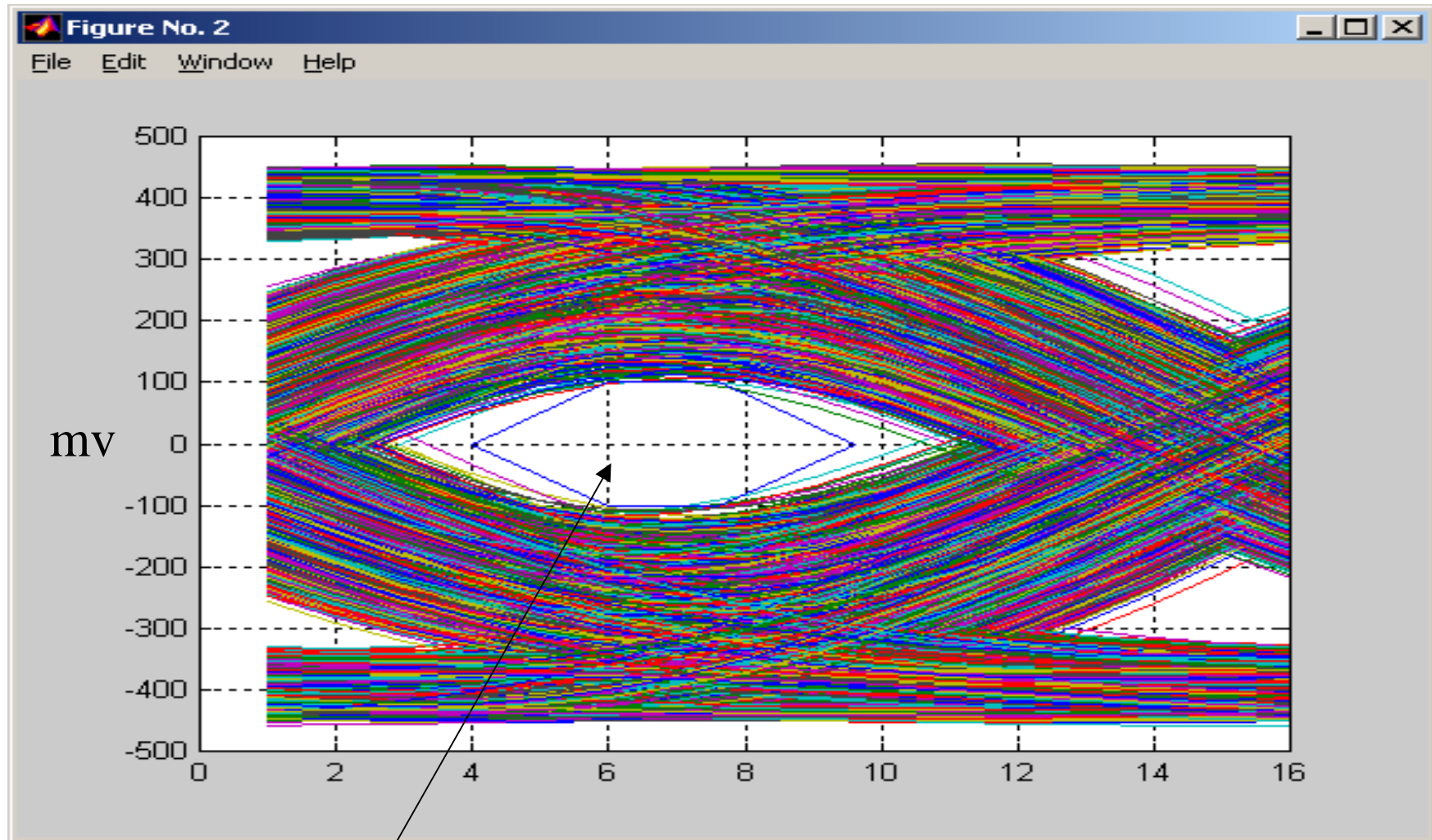

X1 = 0.325UI   X2 = 0.45UI

TX Eye: 0.1UI SJ + 0.35UI RJ

RX Eye

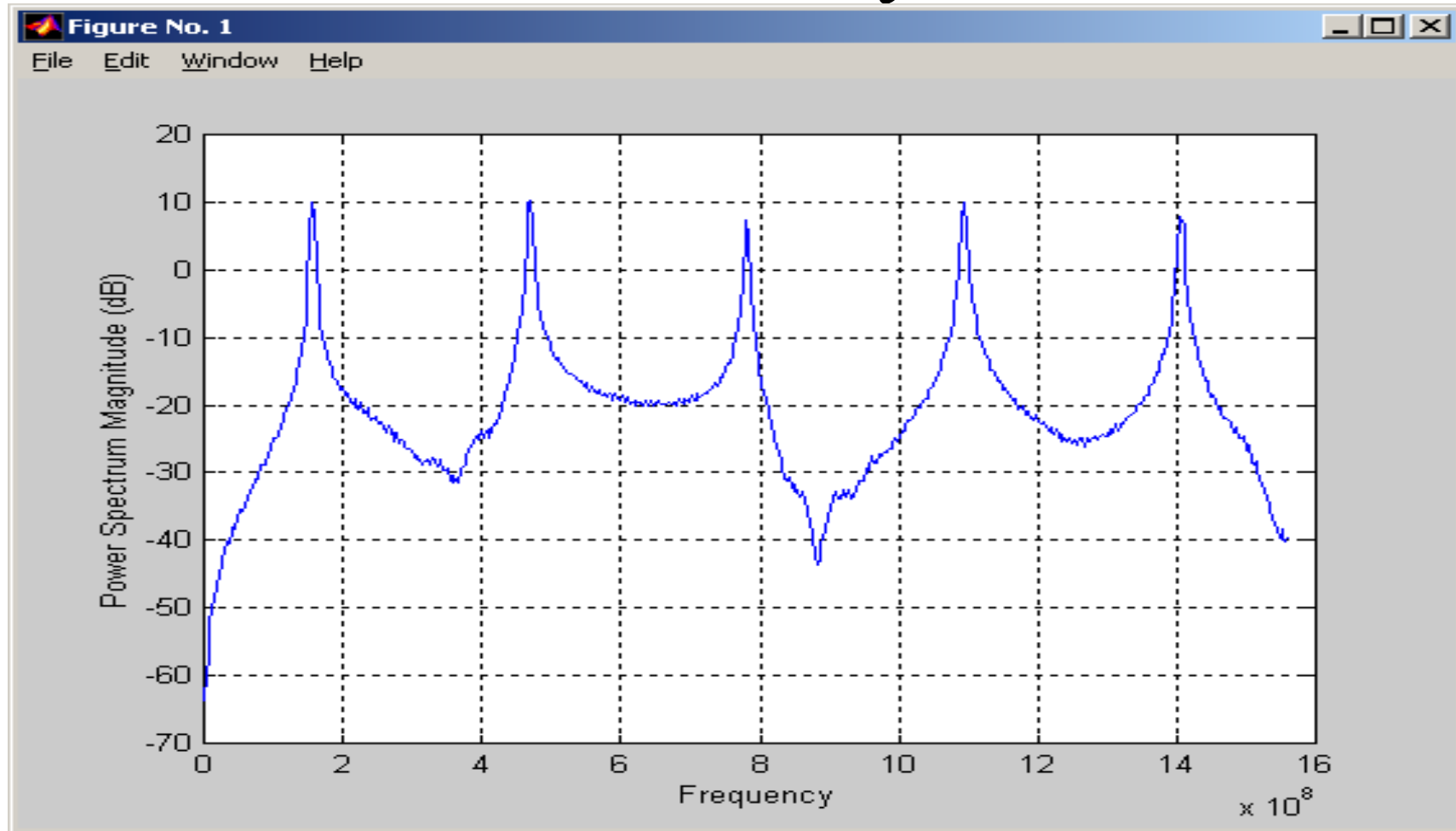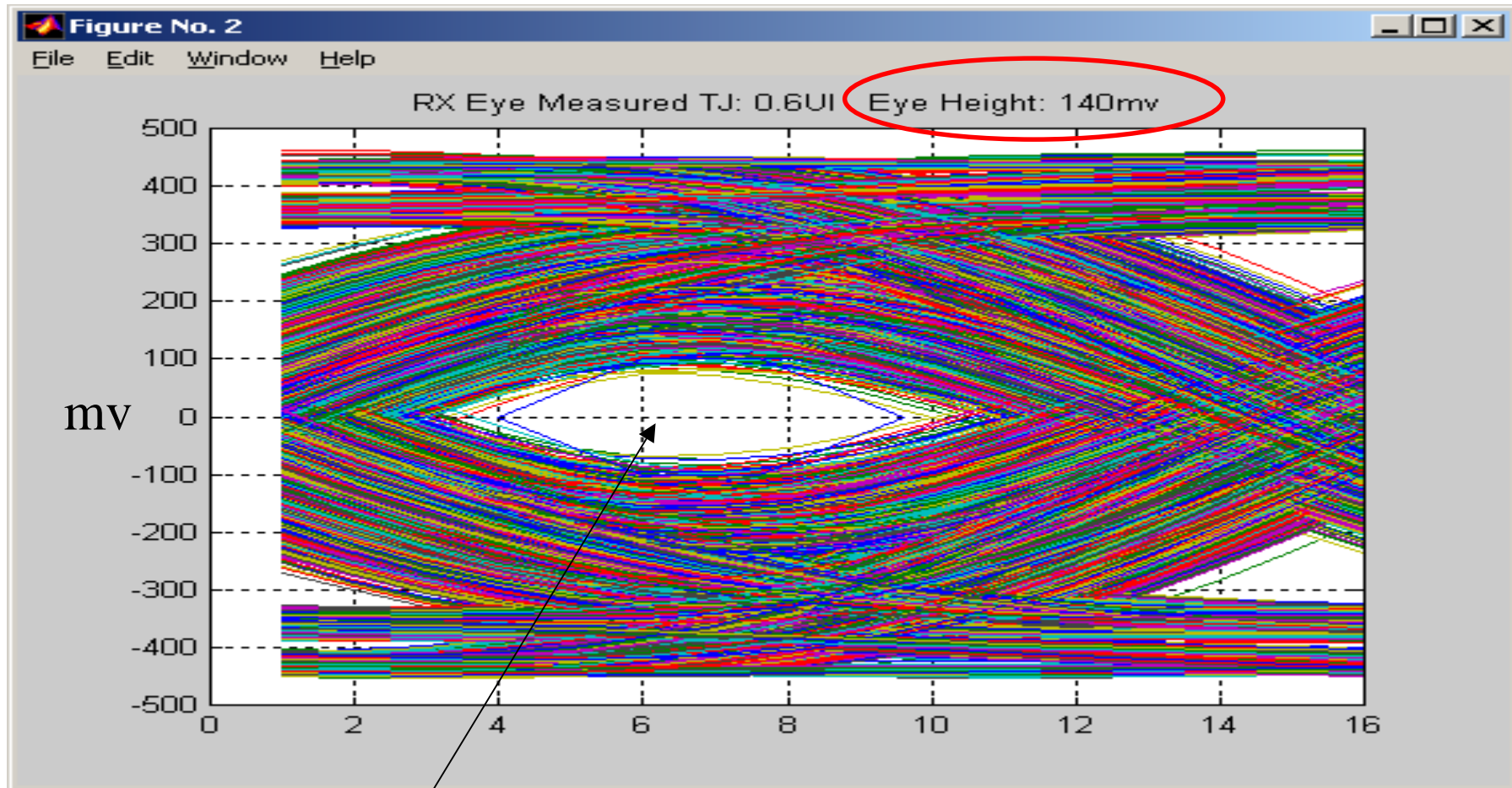X1 = 0.325UI   X2 = 0.45UI

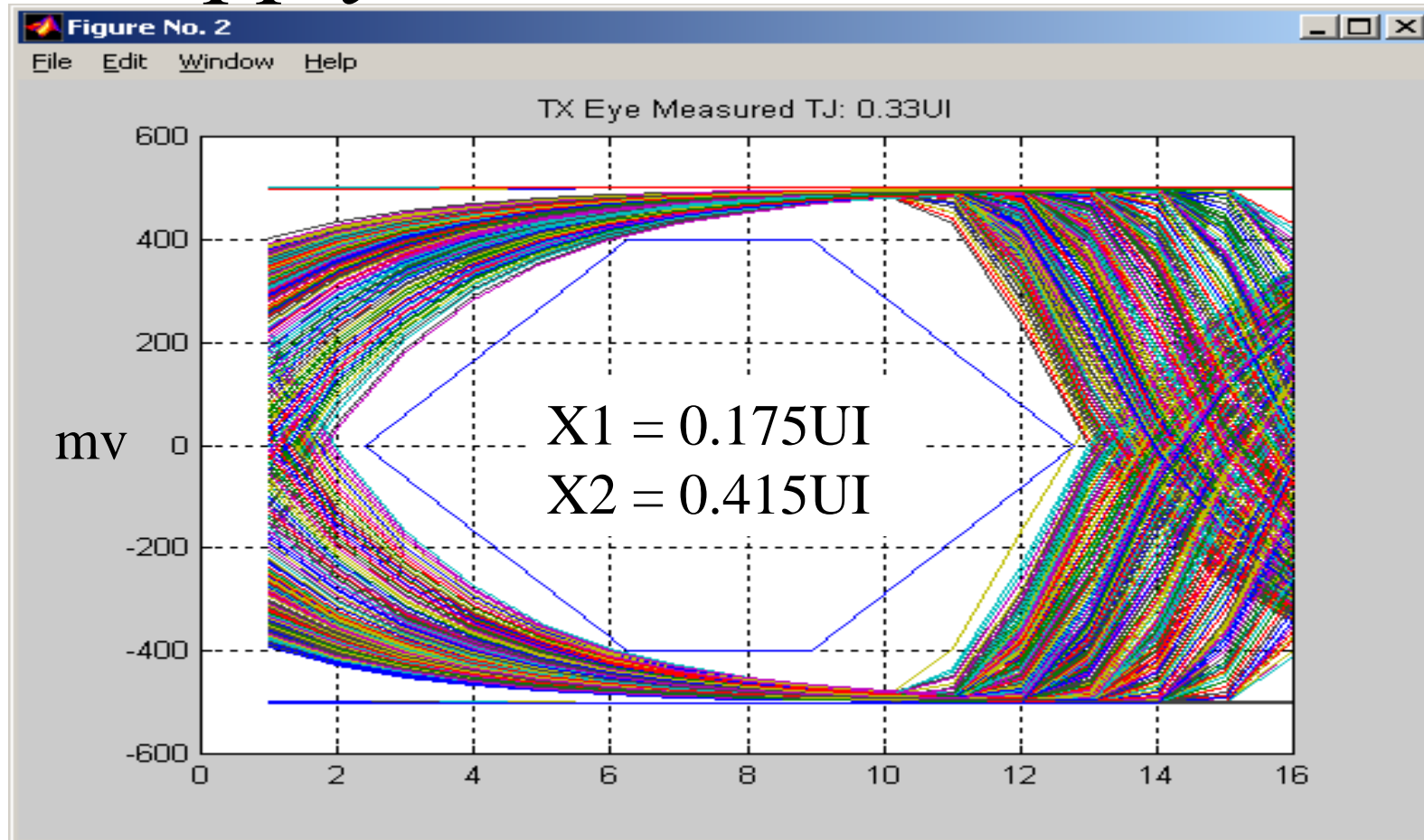# ISI Killer Pattern Power Spectral Density

RX Eye – Using ISI Killer Pattern Apply 0.35UI RJ + 0.1UI SJ

X1 = 0.325UI   X2 = 0.45UI
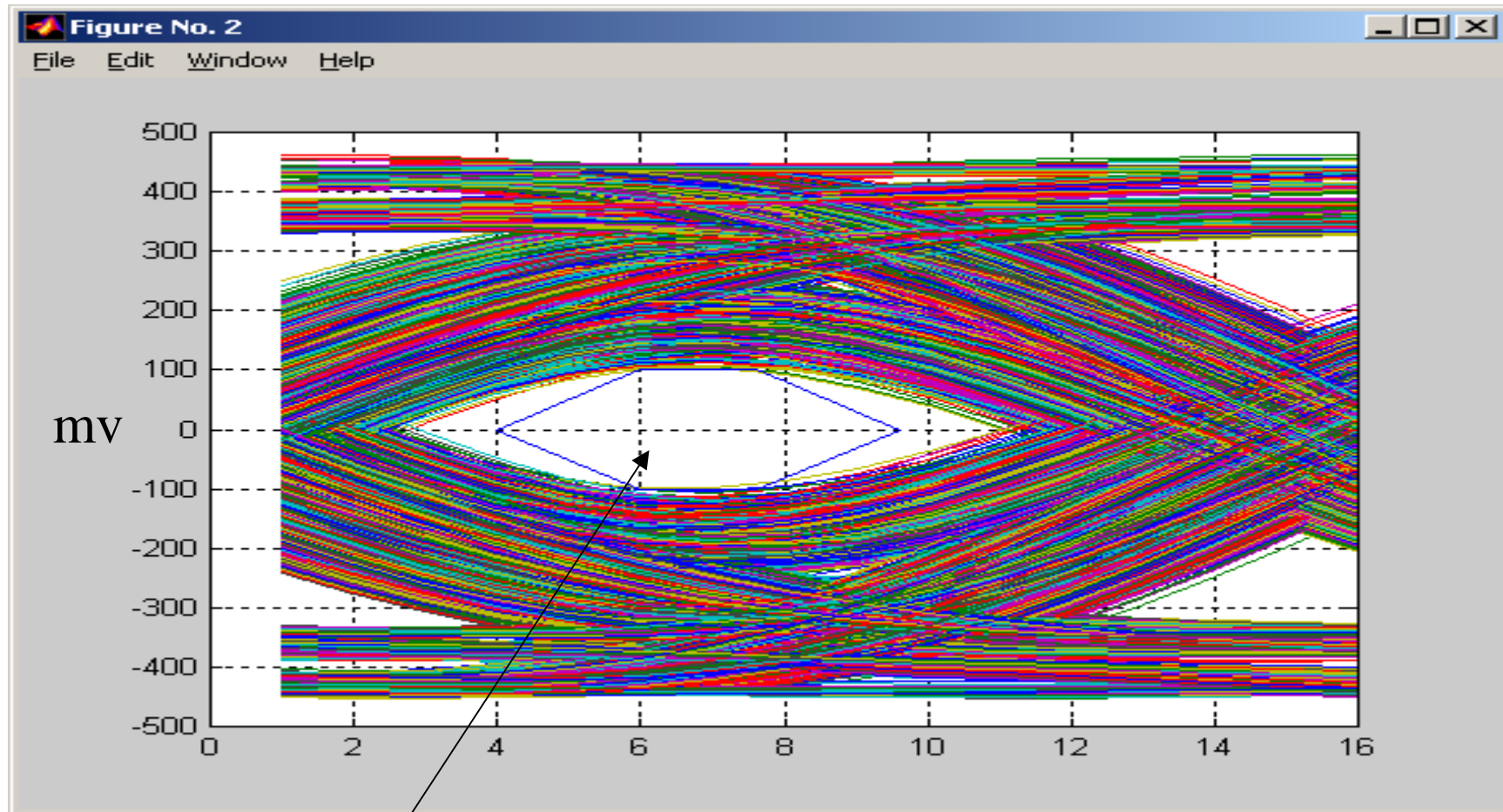
TX Eye – Using ISI Killer Pattern Apply 0.25UI RJ + 0.1UI SJ

TX Eye Measured TJ: 0.33UI

X1 = 0.175UI
X2 = 0.415UI

mv

RX Eye: No Margin For Xtalk and Noise

X1 = 0.325UI   X2 = 0.45UI

TX Eye – Using ISI Killer Pattern Apply 0.25UI RJ + 0.2UI SJ
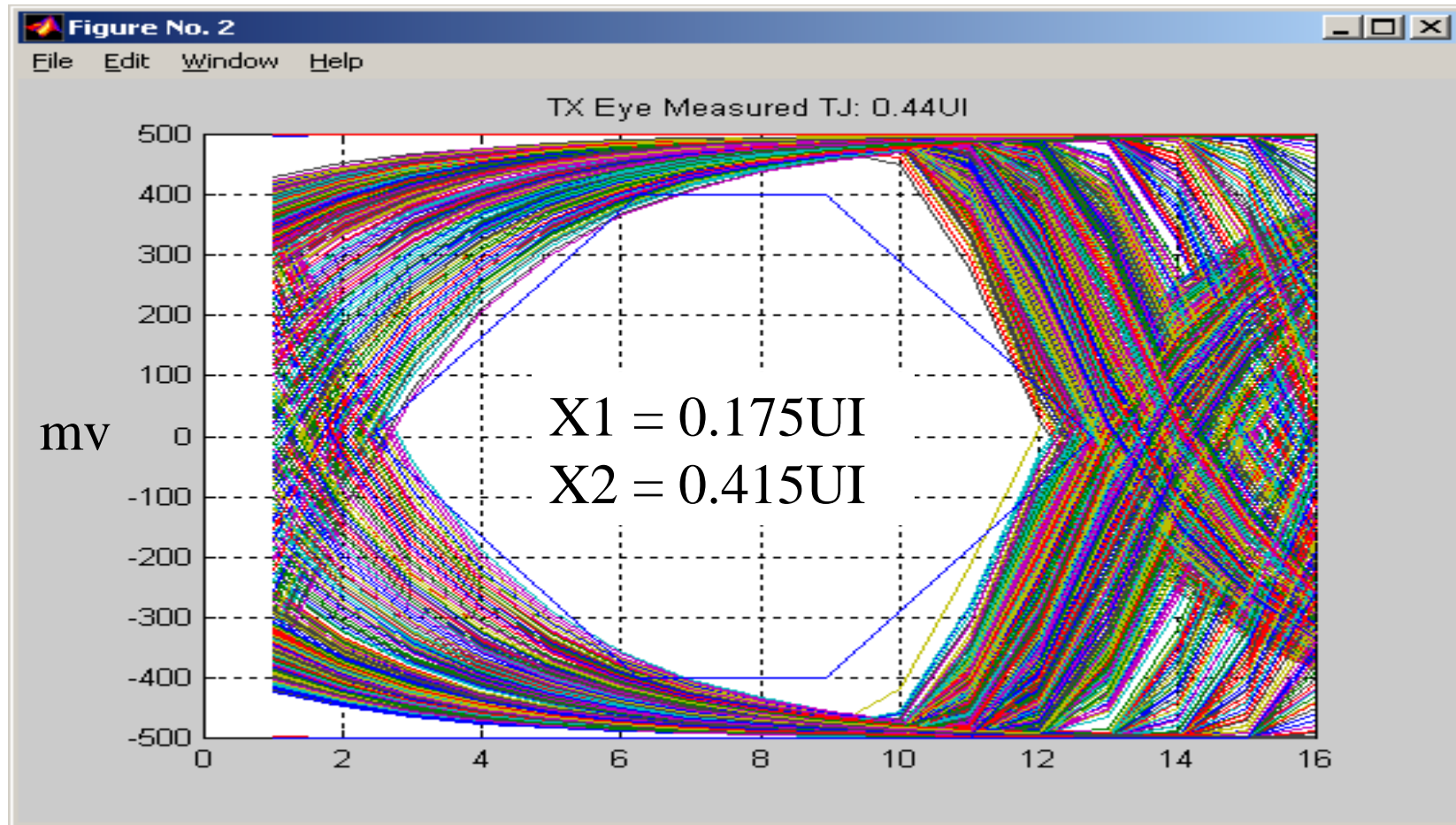
RX Eye Is Too Small

X1 = 0.325UI   X2 = 0.45UI

RX Eye – Using ISI Killer Pattern Apply 0.18UI RJ + 0.17UI SJ

X1 = 0.325UI   X2 = 0.45UI

RX Eye – Using ISI Killer Pattern
Apply 0.18UI RJ + 0.27UI SJ

X1 = 0.325UI   X2 = 0.45UI

TX Eye: 0.18 RJ + 0.27 SJ
With PreEmphasis, 1.2v p-p

Rx Eye With PreEmphasis
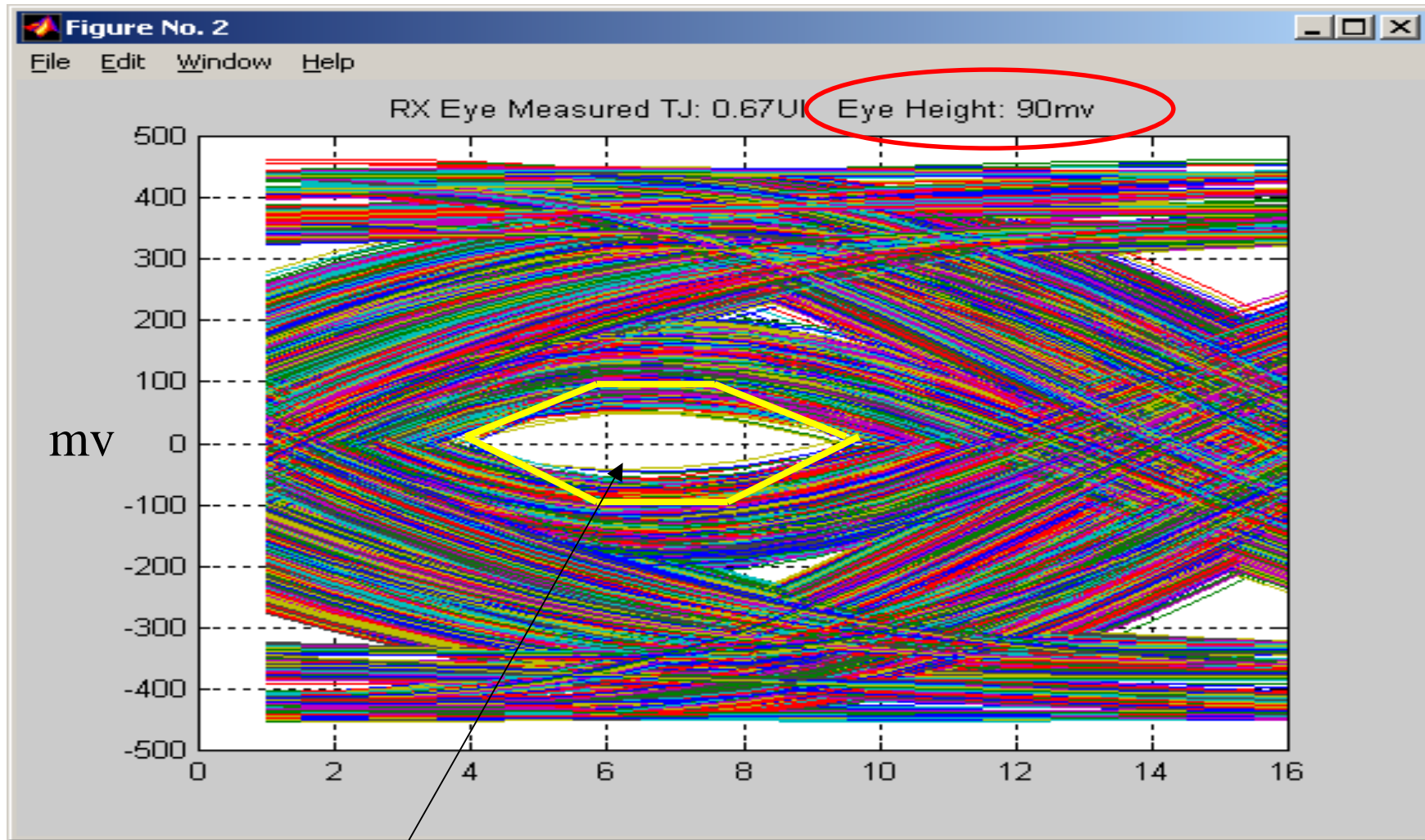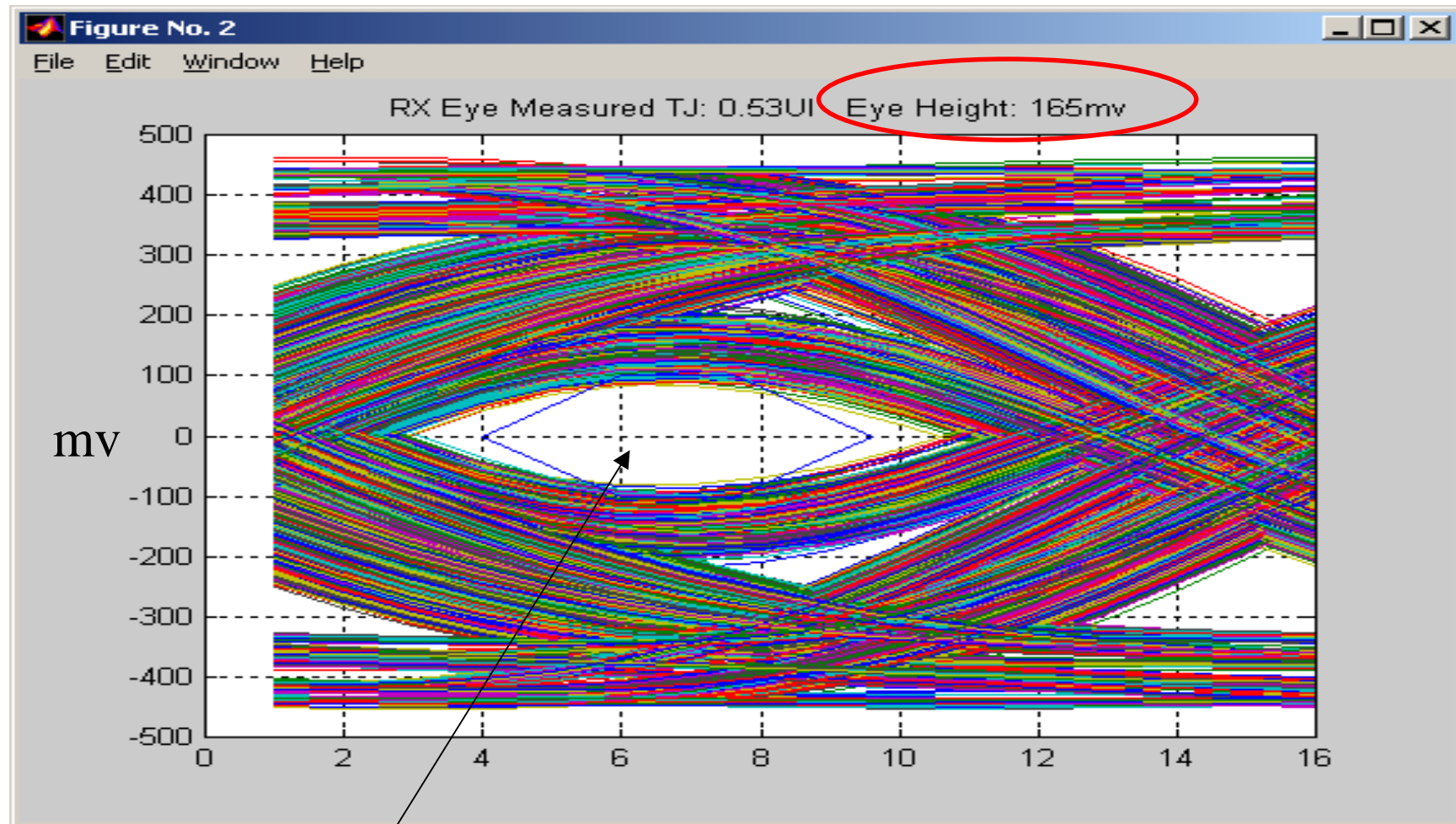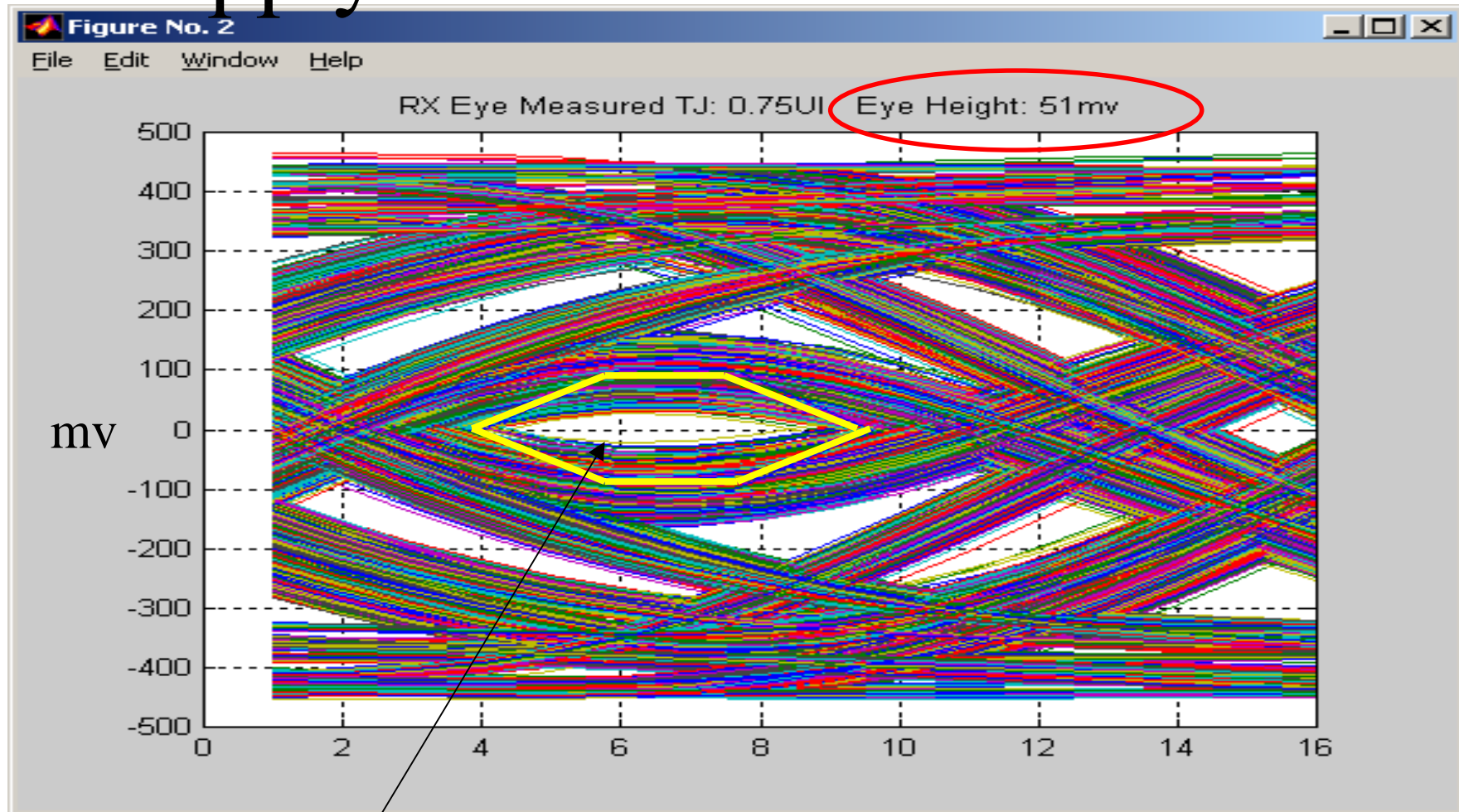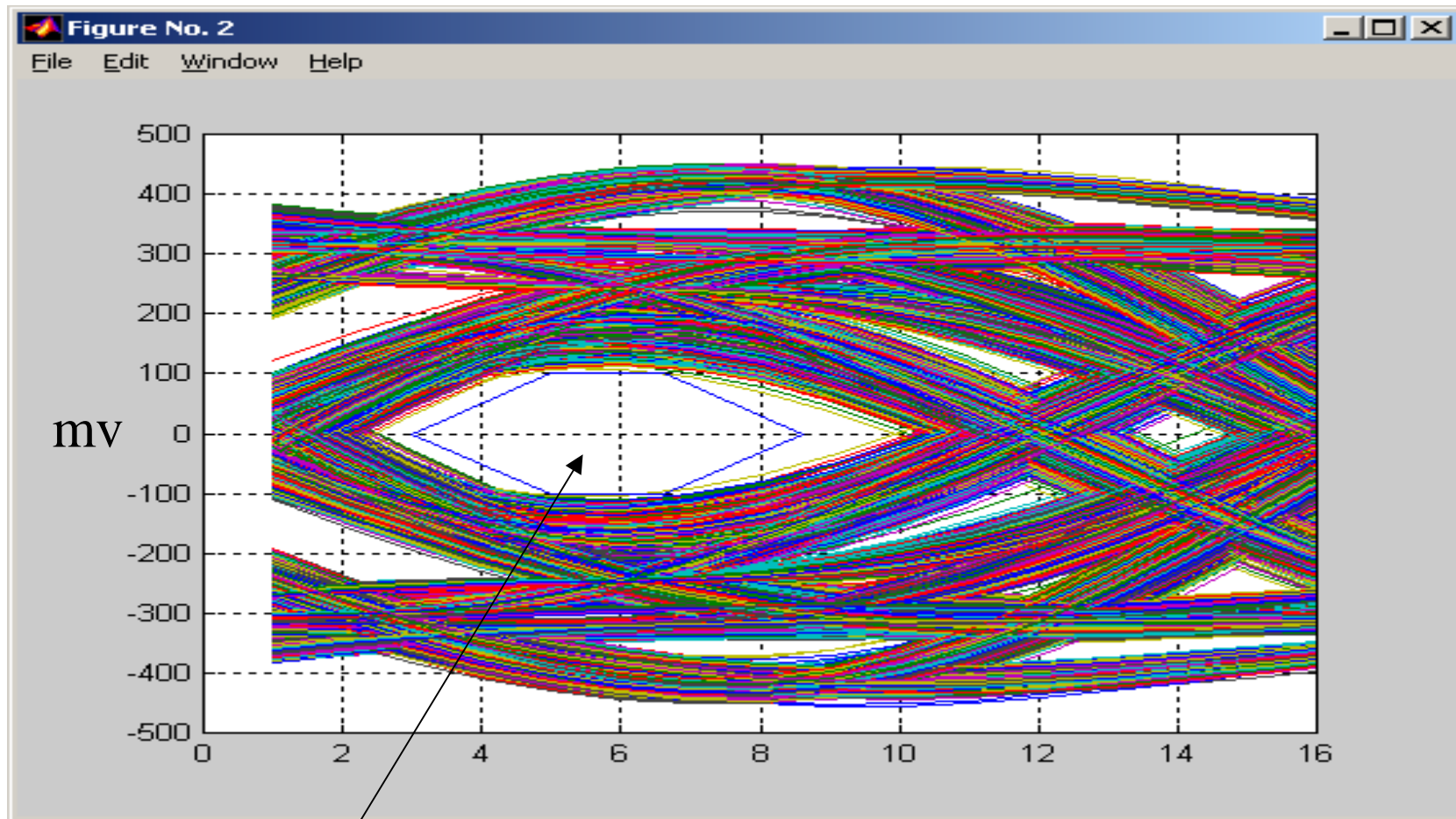
X1 = 0.325UI   X2 = 0.45UI

January, 2001 Interim Meeting

Possible Solutions

- Any of the following steps may be applied:
- Determine Upper Frequency Limit for Sj
  - No one tested FC with >5Mhz
- Select a better Compliance Channel
  - Define exact BKPN Physical Dimensions
- Decrease Eye Pattern Amplitude in Rx
- Easier Jitter Requirements

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