Moving Toward Resolution of TP3 Jitter Tolerance

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Sept 14, 2005

IEEE Interim Meeting

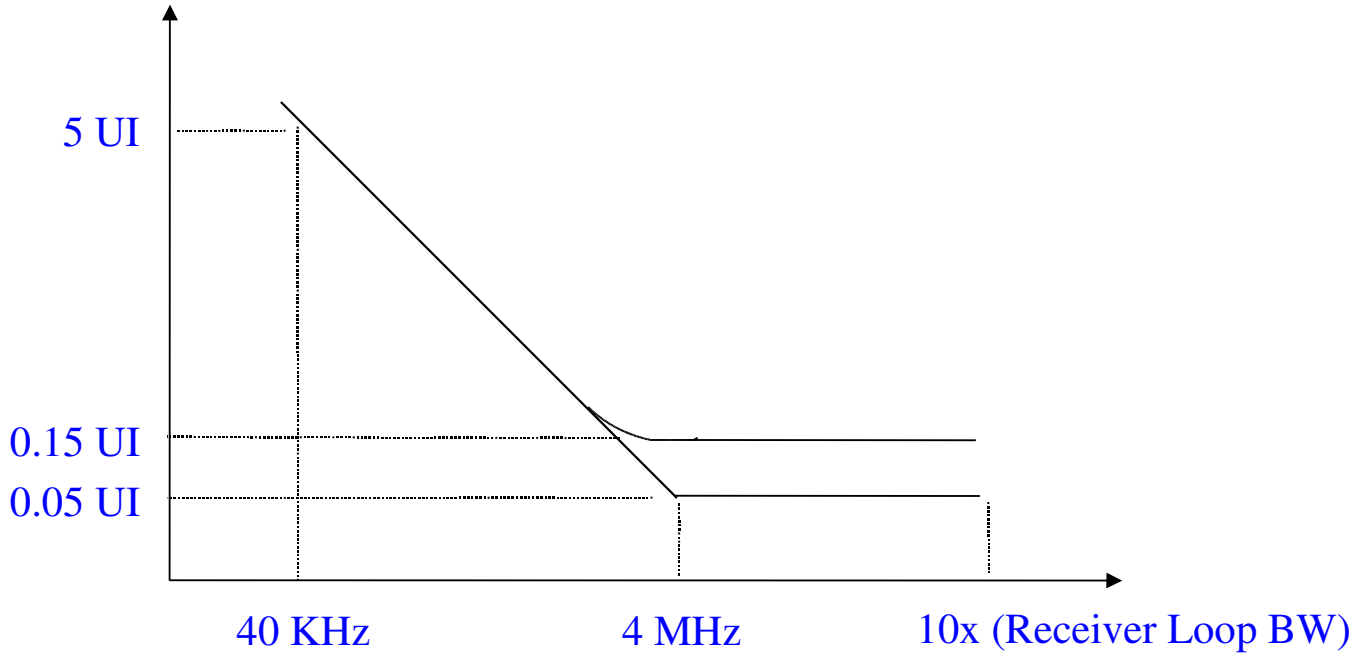
Nashua, NH

Problem Statement

- **Current IEEE 802.3aq draft 2.2 only defines sinusoidal jitter tolerance at 40 KHz and 200 KHz when the transmitter PLL is 4 MHz.**
  - ⇨For example in the frequency range of 200-400 KHz 1 UI to 0.5 UI SJ may be come through the CDR, which is more than enough to break any weak LRM receiver.

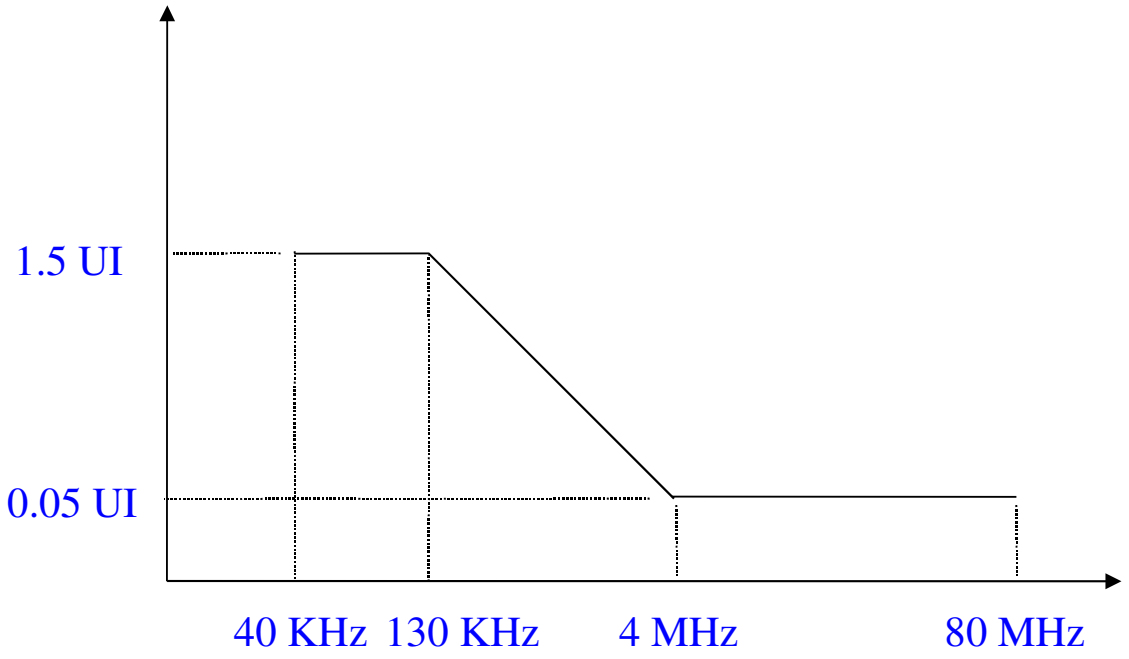
Jitter Tolerance as Defined in 802.3ae

- **LRM is targeted to use the same SerDes transmitter as 802.3ae**
  - ⇨This means jitter corner frequency is 4 MHz.
  - ⇨802.3ae mask shown below and to calibrate stress receiver sensitivity ae allows high frequency SJ be adjusted from 0.05 UI to 0.15 UI.



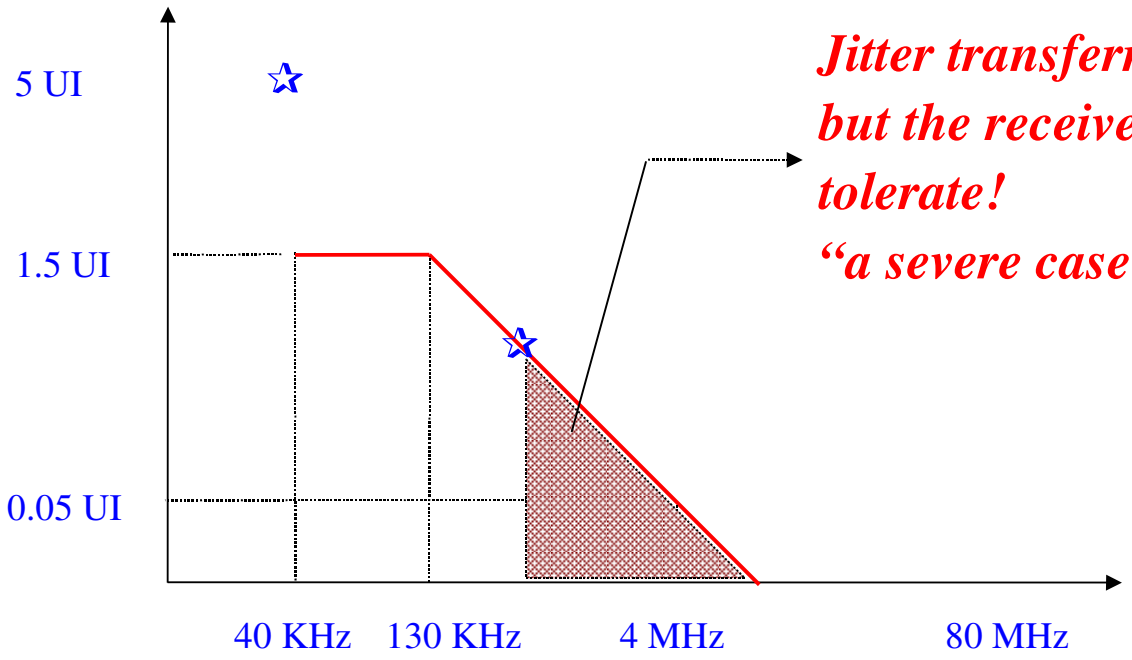
XFP Transmitter Jitter Transfer

- **XFP one of the underlaying reason for LRM PAR was build to support 802.3ae.**



XFP Transmitter Driving LRM Receiver

- **Assuming 4 MHz CDR BW in the XFP**
  - ⇨ Currently defined by IEEE shown as ☆



Jitter transferred by the transmitter but the receiver may not be able to tolerate!
"a severe case for field problems"

Resolving Jitter Tolerance Discrepancy

- Two options exist to resolve jitter tolerance test discrepancy and potential field problems
  - ⇨Define transmit loop bandwidth of 200 KHz – Not practical
  - ⇨Extend the current jitter tolerance from 200 KHz to 4 MHz with the following test frequencies:
    - 5 UI@40KHz, 0.5 UI@400KHz, 0.05 UI@4MHz, 0.05 UI 40 MHz.
    - Also add a note to Table 68-6 saying “above frequency point are provided as reference test point, LRM products must operate error free for all frequencies from 40KHz to 80 MHz when the tolerance points are connected by stright line.