



# XAUI

## Clause 47

Track Chair: Dawson Kesling

# Portland Goals

- Resolve 28 comments against D3.1, equally split between TR, T and E.
- Make technical *changes* now where the issue is important and the information is solid.
- Can make further technical changes in Sponsor Ballot. Make *plans* now to have needed technical information by Sept. Interim.

# Return Loss - Differential

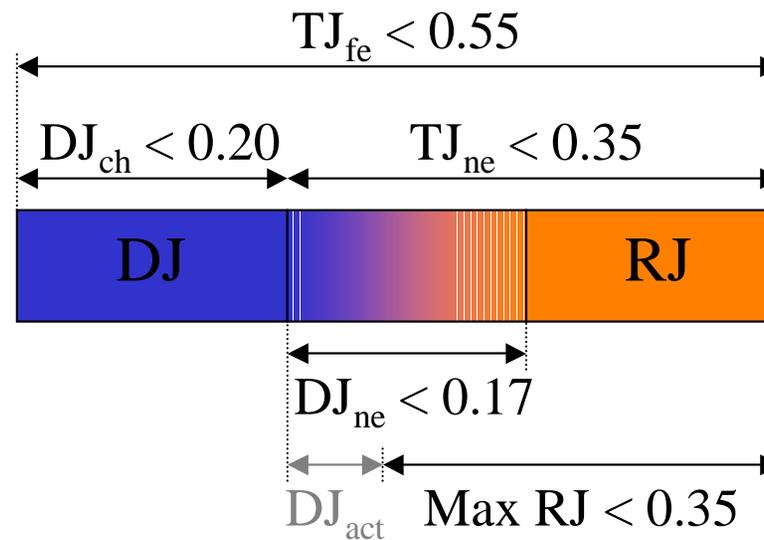
- Presently spec'ed at 10 dB from 100 MHz to 2.5 GHz for driver and receiver.
- Simple RC model suggests this will be a problem for practical drivers with ESD protection.
- No solid measurement results or simulations presented yet. (What can be achieved?)
- No detailed system study presented yet. (What can be tolerated?)

# Return Loss - Common Mode

- Presently spec'ed at 6 dB from 100 MHz to 2.5 GHz for driver and receiver.
- This prevents excessive EMI and limits differential noise from CM-to-differential conversion.
- This requires a low-impedance common mode termination and may complicate integrated coupling and termination.

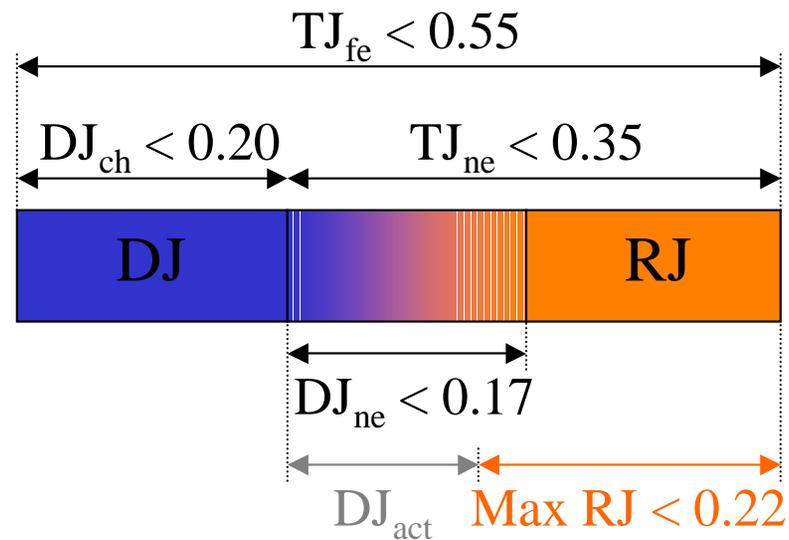
# Maximum RJ

- Presently only limited by  $TJ_{\max} - DJ_{\text{actual}}$ .



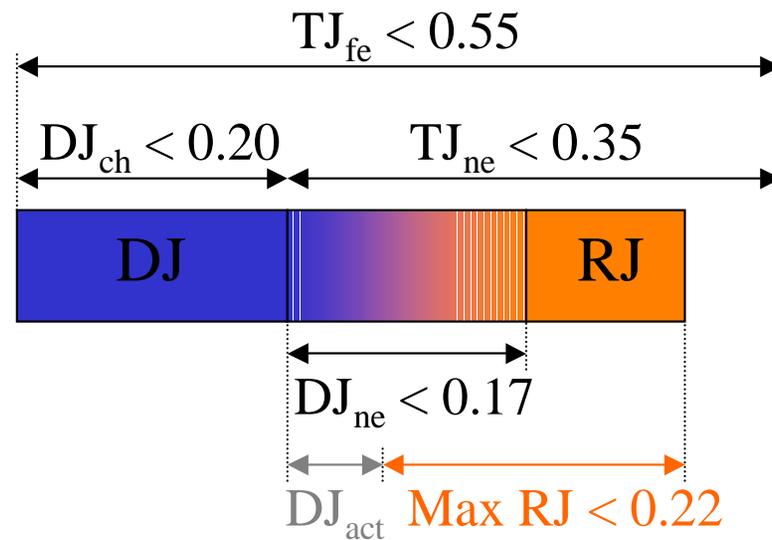
# Maximum RJ

- Presently only limited by  $TJ_{\max} - DJ_{\text{actual}}$ .
- An upper limit on RJ could ease timing recovery requirements.



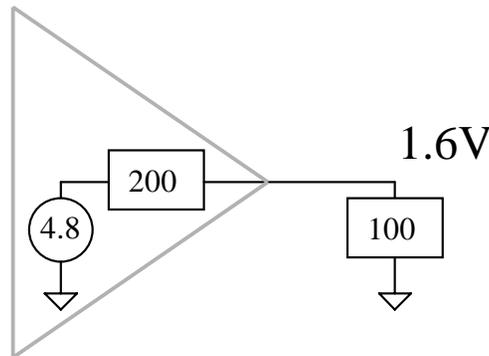
# Maximum RJ

- Presently only limited by  $TJ_{\max} - DJ_{\text{actual}}$ .
- An upper limit on RJ could ease timing recovery requirements.



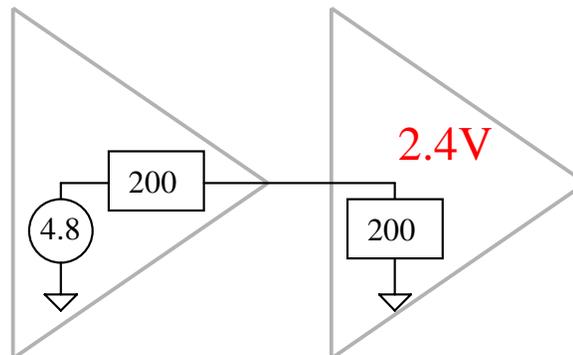
# Maximum Input Amplitude

- Severe example: Driver impedance at 1.56 GHz is 200 ohms with no reactive component.
- Thevenin equivalent source voltage is 4.8Vpp at 1.56 GHz (1010 pattern).



# Maximum Input Amplitude

- Severe example: Receiver impedance is the same as the driver.
- Resulting receive signal is 2.4Vpp.





# Compliance Channel Review

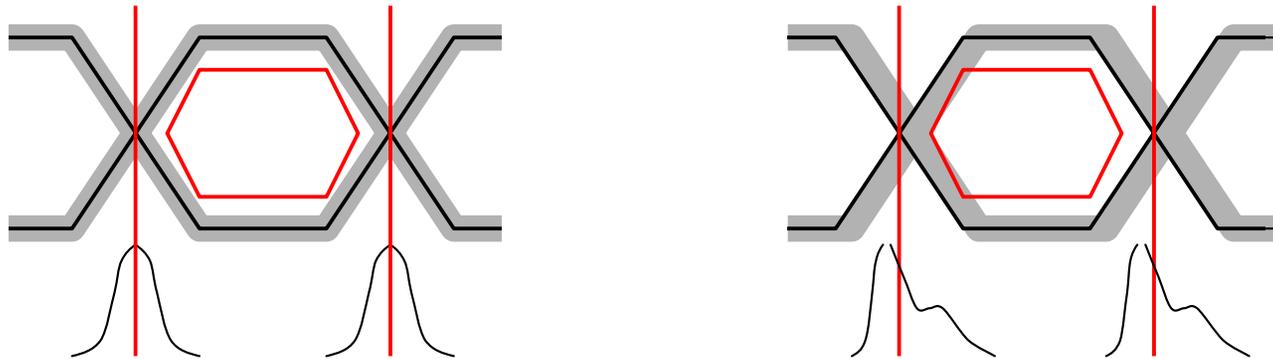
- Initial efforts to define physical channels (both PCBs and filters) were unsuccessful. The affects of the material and manufacturing variations of physical systems are too great at the high frequencies important to XAUI.

# Compliance Channel Review

- Eight companies built, measured and pooled data on high-speed differential FR4 PCB interconnects.
- Twelve companies participated in defining the S-parameter methodology to best define a compliance channel around the pooled data.
- The Task Force ratified these results.
- Several companies have built back plane interconnects meeting the compliance channel definition. UNH/IOL has begun testing with one such compliance system.

# Horizontal Eye Centering

- The task force approved centering the eye in the template at the May Interim.
- There is some debate as to whether this is appropriate for copper channels.



# Technical Feasibility

- “To demonstrate a BER of 10<sup>-12</sup> over the rated distance; shown to be interoperable between PMD of at least two vendors for each PMD type.”
  - 10GEA group has shown BER << 10<sup>-12</sup> over lengths longer than 20” between four vendors.
- “Path to full compliance is explained credibly.”
  - Lots of compliance data now being taken by several companies.
- “PMA feasibility demo is implicit here.”
  - Full box-to-box operations demonstrated by one system vendor.
- “By Sept. 17, 2001.”
  - Done now!