

# dambrosia\_02\_0505

## Informative Model

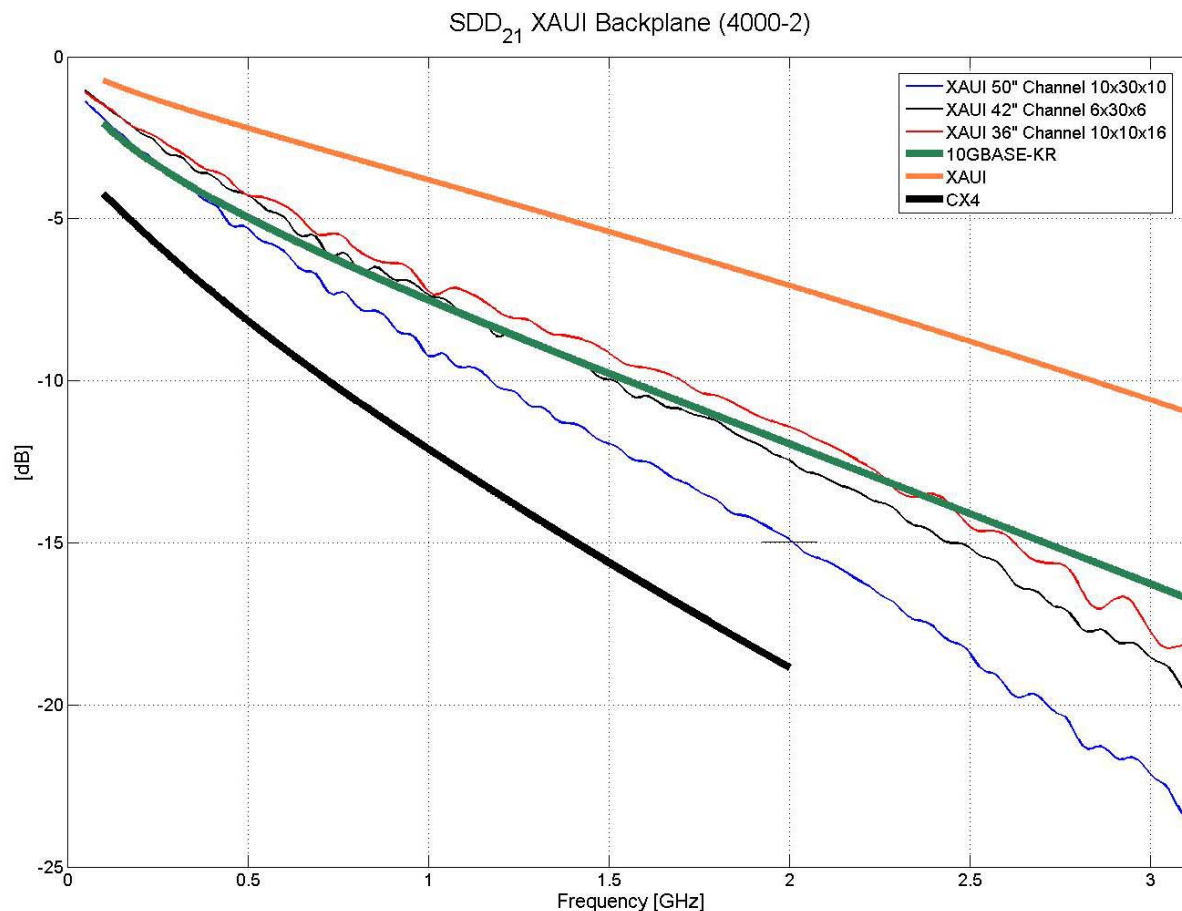
## Methodology Update

John D'Ambrosia  
Tyco Electronics

# Discussion

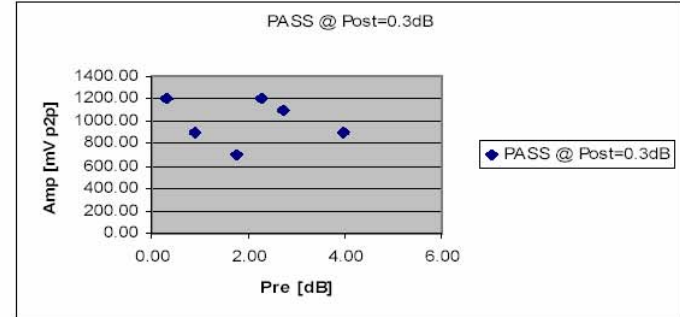
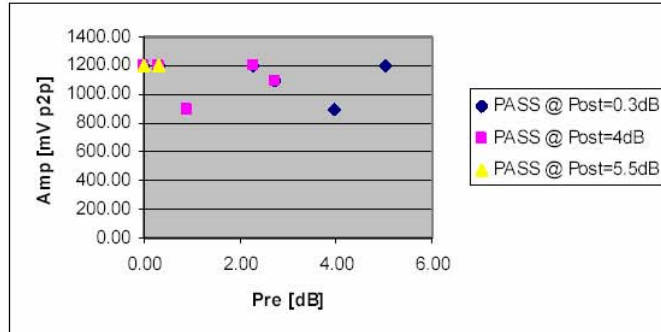
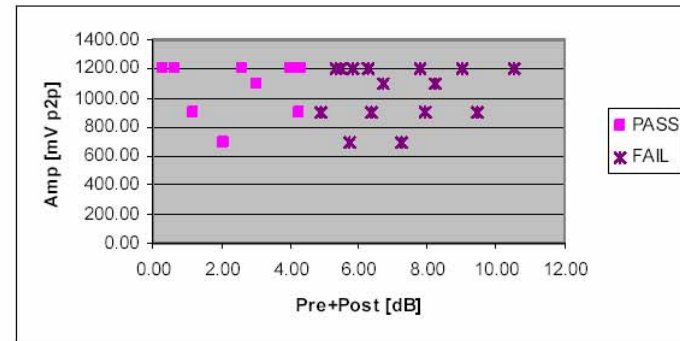
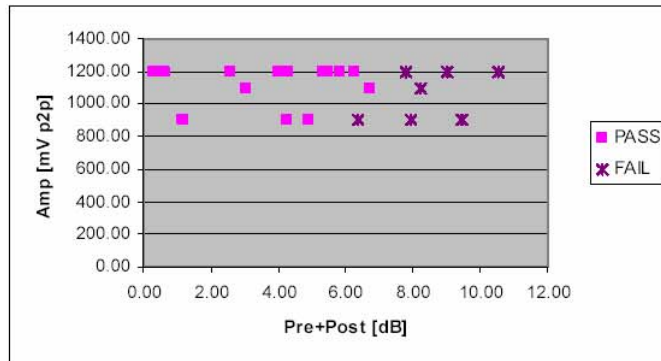
- Informative Model Methodology (dambrosia\_01\_0105) approved
- Correlation with Signal Ad Hoc Results underway (melitz\_01\_0505)
- General comments
  - This is done in relation to 10GBASE-KX
  - It is desirable to run 1000BASE-KR and 1000BASE-KR4 over existing legacy systems
- Need model for 1000BASE-KR and 1000BASE-KR4 channels
- Use similar methodology from 10GBASE-KX efforts

# Models / Data Comparisons



# 10GBASE-KX4 Testing (taich\_01\_1104)

## Test Results – HM-Zd XAUI Backplane (Nelco 4000-2)



10x30x10 configuration

2x2x1 configuration

mysticom

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November 2004 802.3ap Task force meeting

tyco  
Electronics

IEEE P802.3ap Backplane Ethernet Task Force  
Austin, Tx Interim, May 2005

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# Considerations

- XAUI Channel Model
  - Based on 20" FR-4
  - Has been used since release of specification
  - Body desires higher degree of interoperability at twice the reach
- CX4 Insertion Loss
  - Not representative of a backplane environment. More severe loss than 1.25x the 1m target over low grade FR-4
  - Would add complexity / power
- 10GBASE-KR Channel Model
  - Remember – not the same frequency range for 1000BASE-KX and 10GBASE-KX4
  - Looks reasonable for 1m channels
  - Demonstrated performance by Mysticom on channels below this model

# Recommendations

- Adopt worst case attenuation limit for 1000BASE-KX and 10GBASE-KX4

$$\text{AttenuationLimit} = -20 * \log_{10}(e) * [b1 * f^{(1/2)} + b2 * f + b3 * f^2 - b4 * f^3]$$

$f = 50 \text{ MHz to } 15 \text{ GHz}$

$b1 = 2.25e-5$

$b2 = 1.20e-10$

$b3 = 3.50e-20$

$b4 = 1.25e-30$

- Adopt methodology from 10GBASE-KR for both 1000BASE-KX and 10GBASE-KX4