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# **Proposed Cabling Specifications for 100% 10GBaseT Coverage**

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# Overview

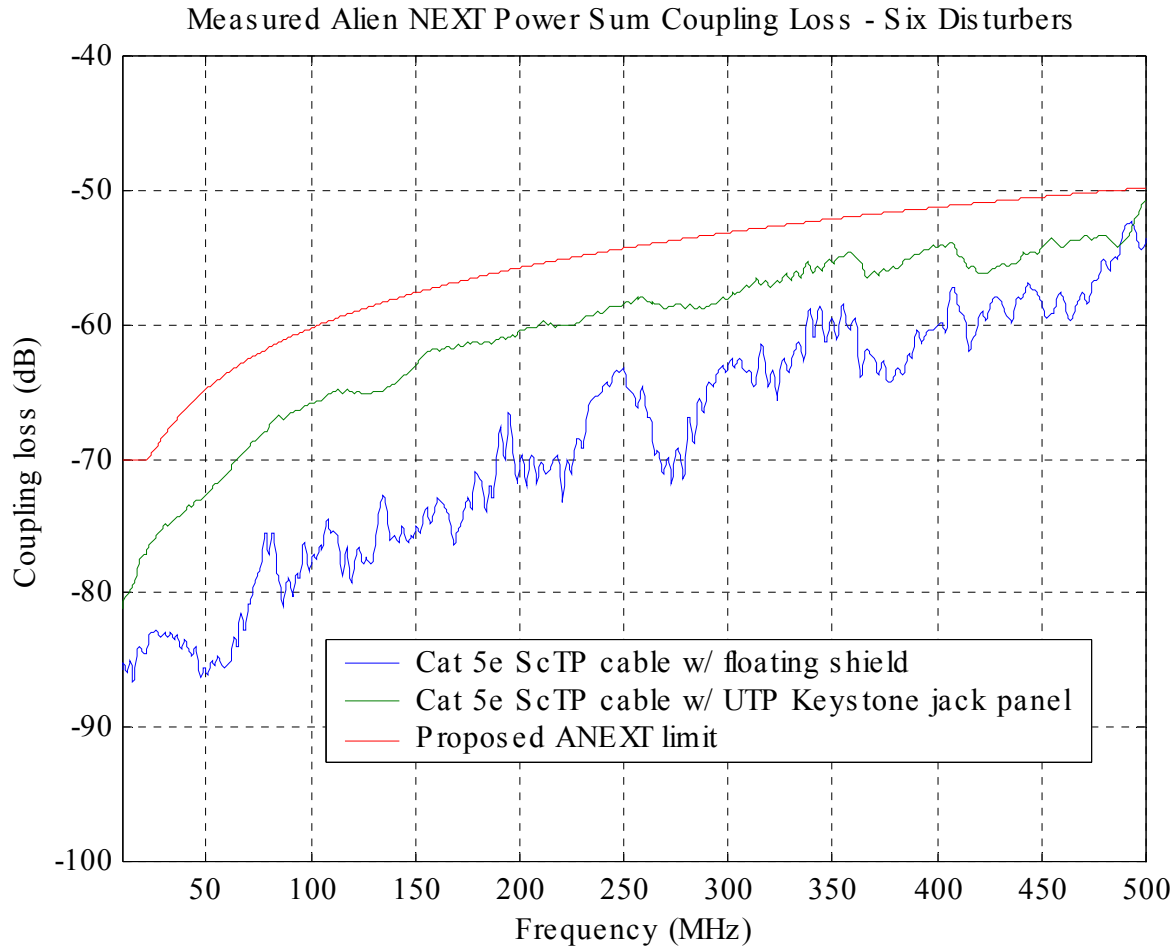
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- Purpose:
  - Define electrical specifications for a new class of cabling components that provides 100% 10GBaseT coverage
- General requirements
  - Definition from DC to 625 MHz
  - Component requirements based on existing specifications and measurements of existing components (assures technical feasibility)
  - Cabling components compatible with existing UTP RJ45 connectors

# Channel Requirements

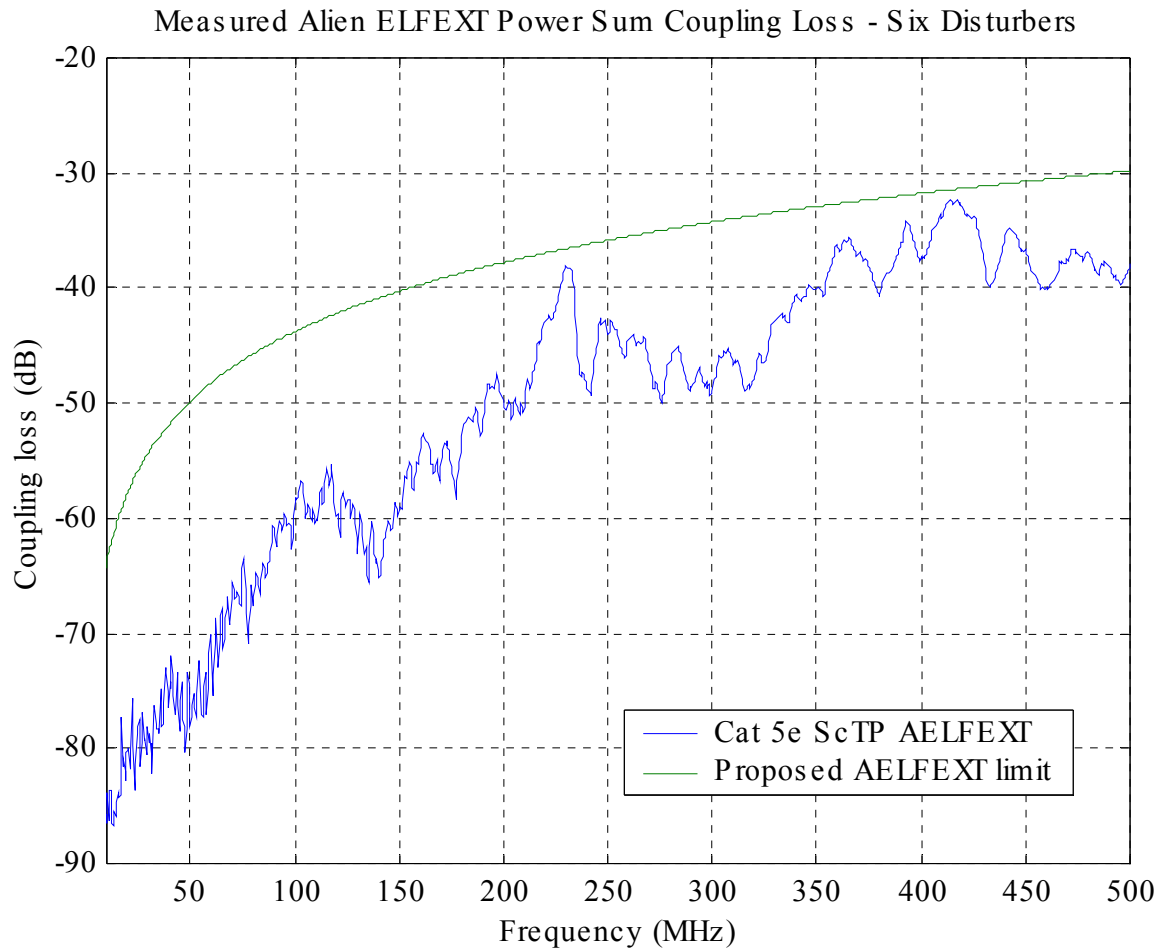
- Insertion loss
  - $1.7766 \cdot \sqrt{f} + 0.0160 \cdot f + 0.0188 / \sqrt{f} + 0.00015 \cdot f^{3/2}$
  - Slightly better than Cat 6 channel extended to 625 MHz
- Return loss – Cat 6 extended to 625 MHz
- NEXT – Cat 5e extended to 625 MHz
- PSNEXT – Cat 5e extended to 625 MHz
- ELFEXT – Cat 5e extended to 625 MHz
- PSELFEXT – Cat 5e extended to 625 MHz
- Balance – Cat 6 extended to 625 MHz
- Alien crosstalk requirements:
  - Alien NEXT –  $60.3 - 15 \cdot \log_{10}(f/100)$ , 70 dB max (f in MHz)
  - Alien ELFEXT –  $43.8 - 20 \cdot \log_{10}(f/100)$ , 70 dB max

# Alien NEXT Measurement



- Measurements for six disturbors tightly bundled around one victim
- Alien NEXT limit can be met by screened cable with floating shield and Keystone jack panels

# Alien ELFEXT Measurement

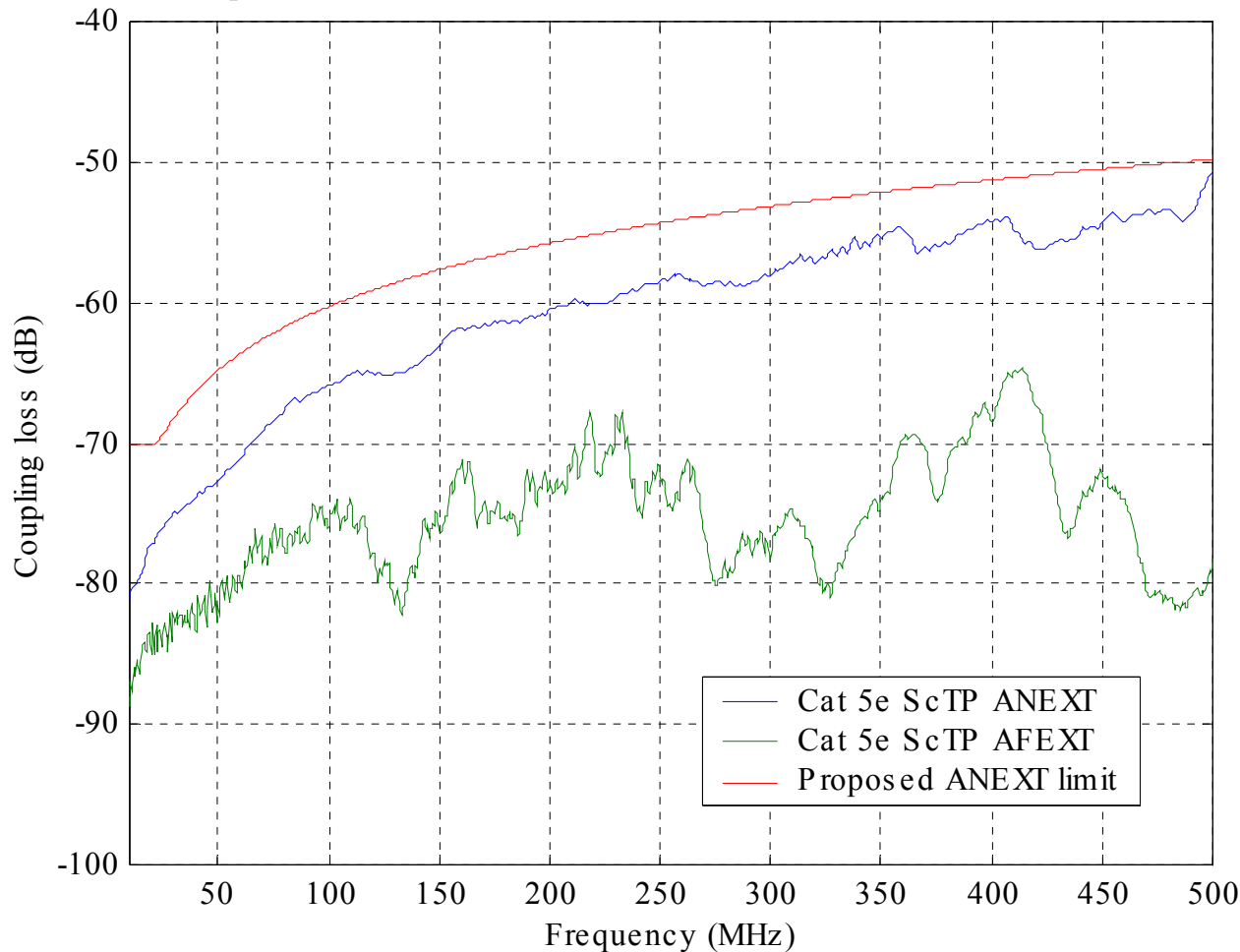


- Measurements for six disturbers tightly bundled around one victim

- Alien ELFEXT limit can be met by screened cable with floating shield and Keystone jack panels

# Comparison of Alien NEXT and Alien FEXT

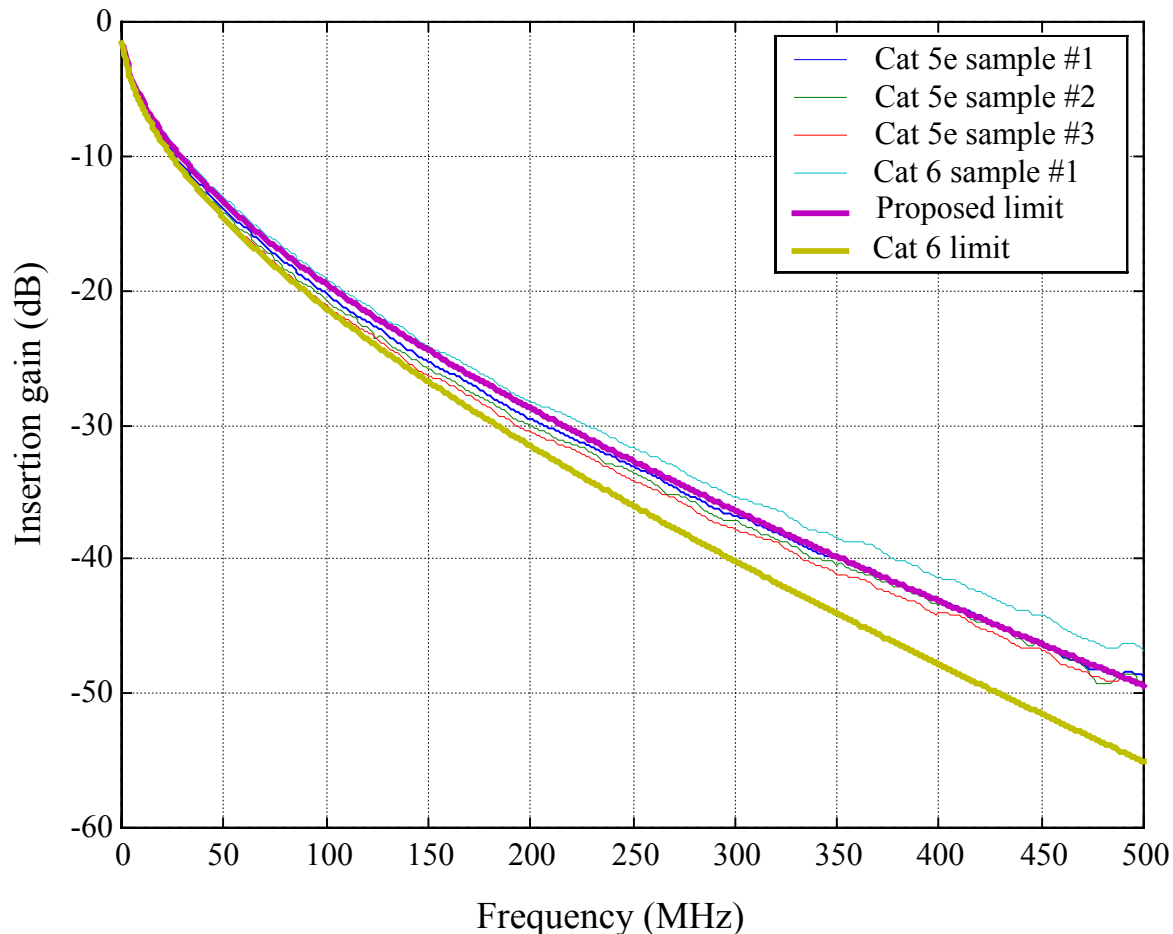
Comparison of Alien NEXT and Alien FEXT - Six Disturbers, 90 meters



- Alien NEXT dominates alien FEXT on midrange and long spans

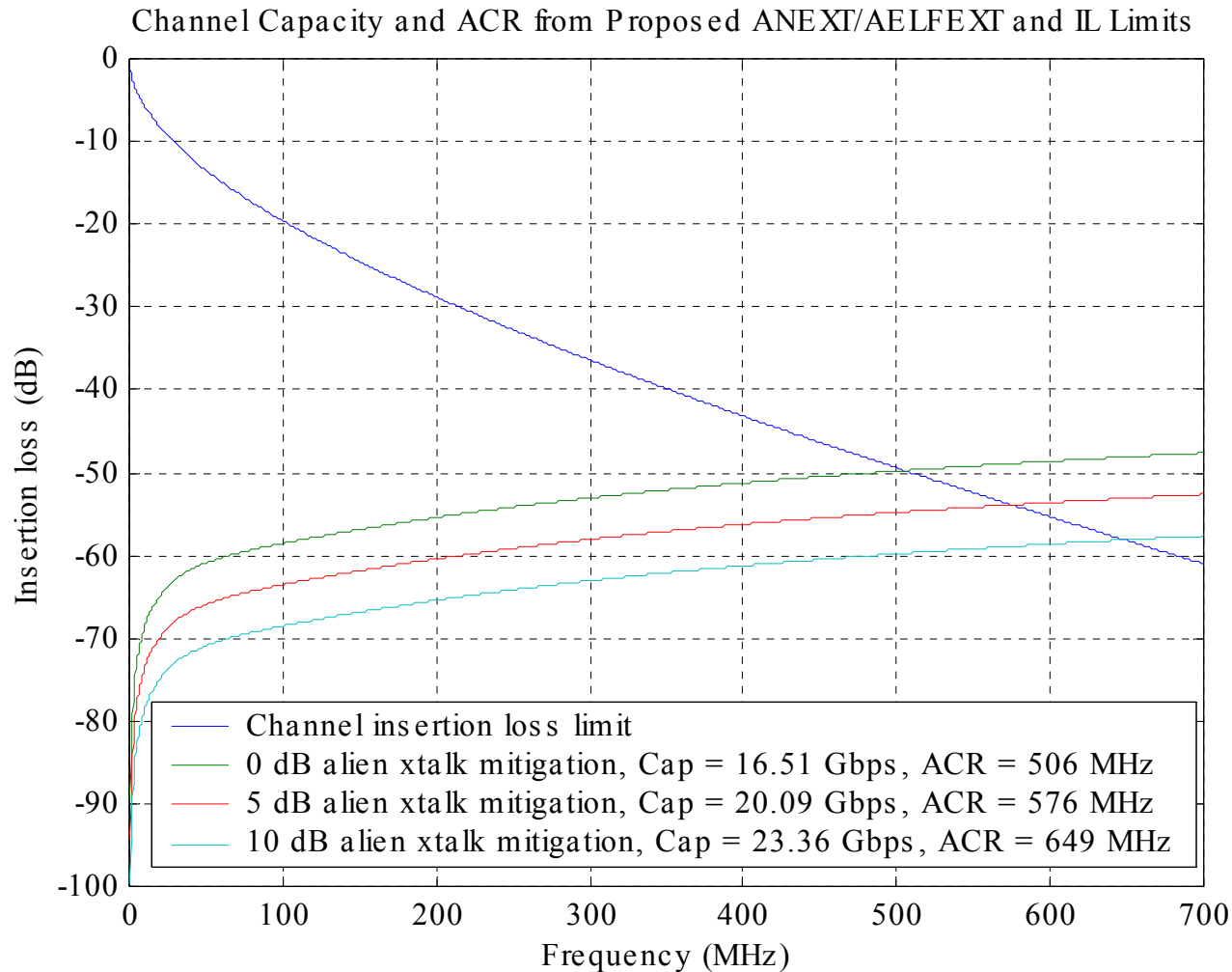
# Insertion Loss Measurements

Measured Worst-Case Pair Insertion Gain  
100 meter channel



- Proposed limit can be met by some existing Cat 6 channels
- Slightly better than measured Cat 5e channels

# Capacity and ACR Calculations





# Summary

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- Forward specification to TIA TR42.7 as per request in liaison letter.