802.3dv Electrical Channel Considerations

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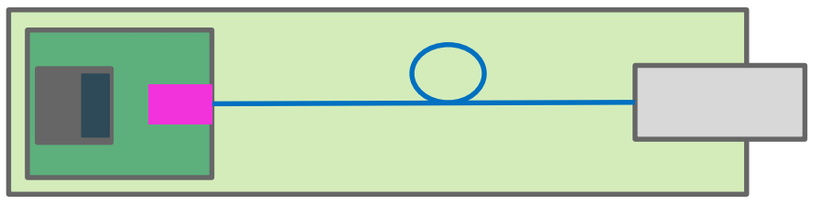
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Introduction

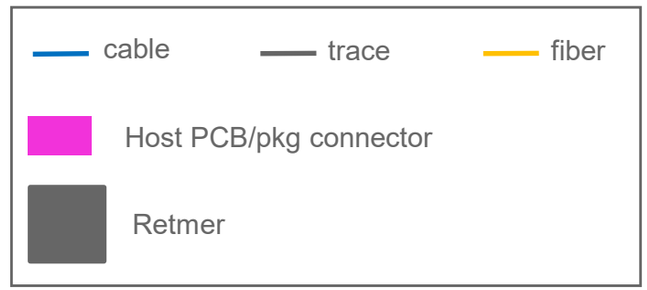
- Initial discussion of electrical topologies for consideration for 802.3dv
- Identifying key topologies:
  - Host types (traditional, NPC, CPC)
  - Pluggable connector types (OSFP, XPO, etc.)
  - PAM4 vs PAM6 modulation
- Note: CPO is beyond the scope of the contribution

System Architectures

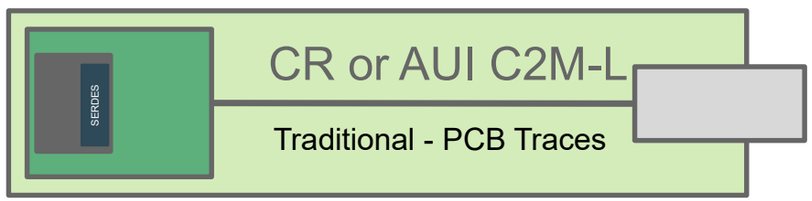
#1 Co-Packaged Copper (CPC)



DAC or Optics

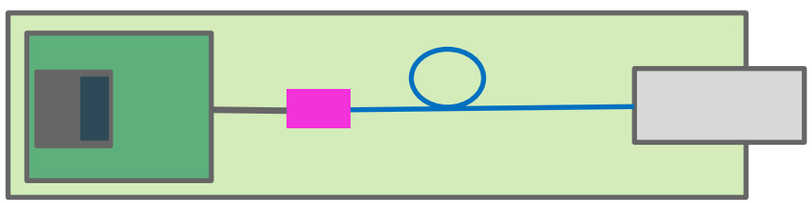


#2 Traditional - PCB Traces



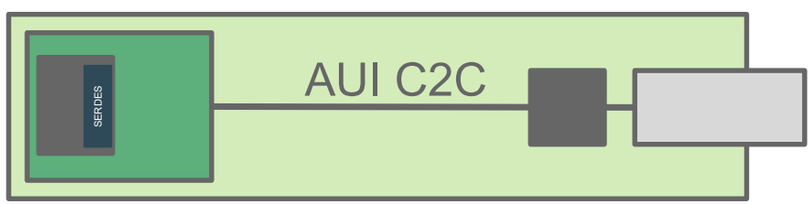
DAC or Optics

#3 Near-Packaged Copper (NPC)

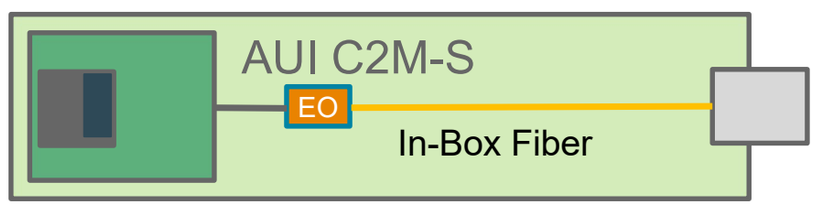


DAC or Optics

#4a



#4b Near Package Optics (NPO)



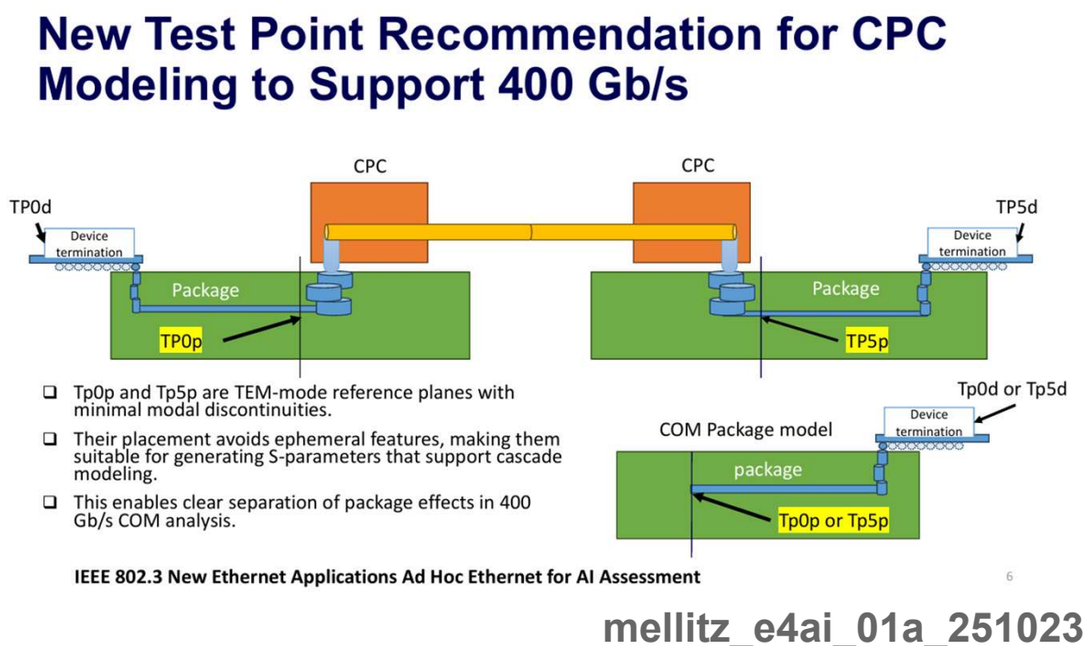
Optics

Suggested Channel Parameters

- Host CPC cable length (sys arch #1): 150mm*, 200mm, 250mm, 300mm, 350mm*
  - *stretch goals
- Copper cable length (CR): 0.5m, 0.75m, 1.0m
- Simulation stop frequency: 110-120 GHz
- Initial investigations:
  - Passive only
  - 92.5Ω impedance

Channel-Package Partitioning

- Need to define the test points to minimize the impact of modal discontinuities.
- Implies ‘repartitioning’ to include package vertical and short trace segment in the channel.
- Refer to mellitz_e4ai_01a_251023



mellitz_e4ai_01a_251023

Conclusion and Future Work

- Requests:
  - channel contributions!
  - feedback on
    - prioritization of topologies
    - channel parameters for all system architectures
- Need to define channel-reference package boundary
- Further impedance studies needed between 85 vs 92.5 ohms
- Probably time to start thinking about active channels

Thank You