



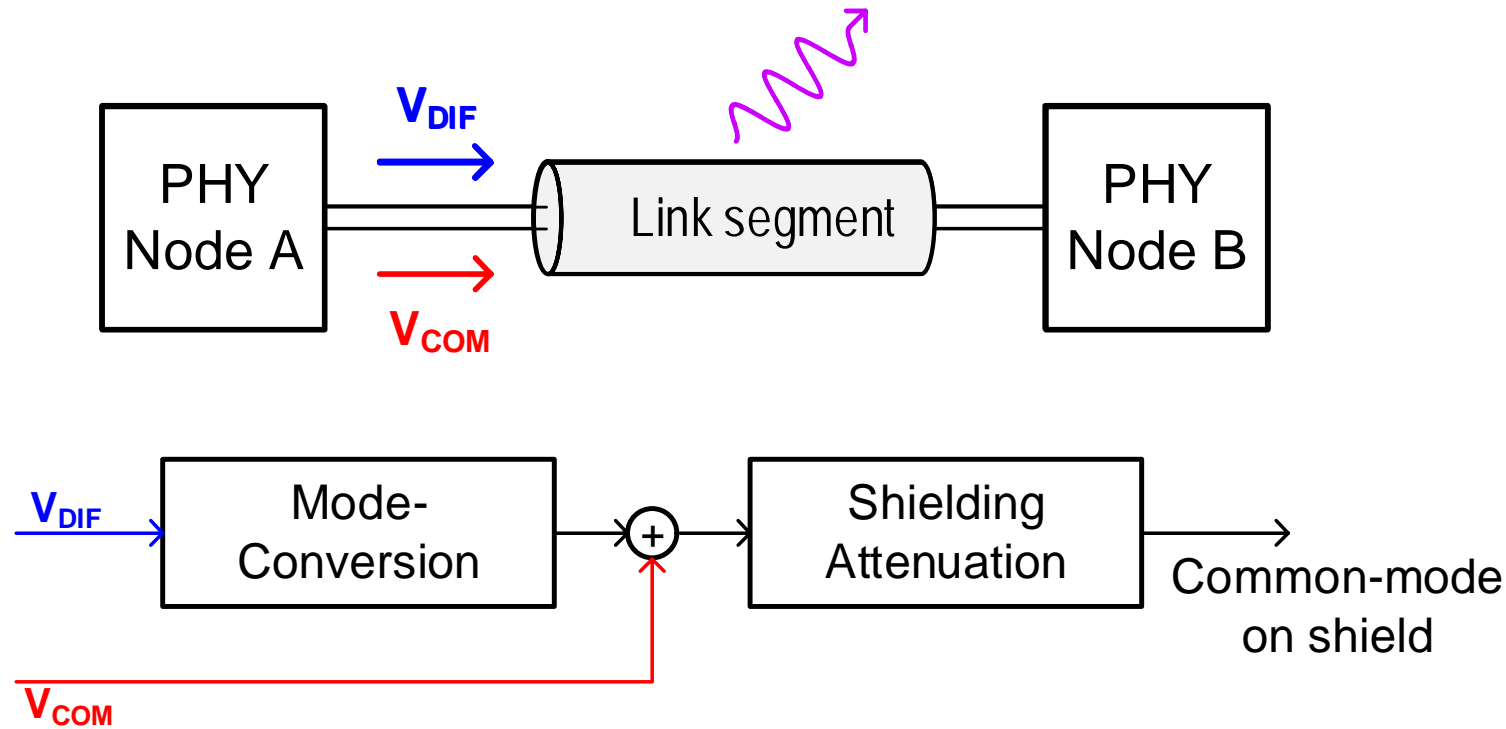
# Shielding attenuation for STP link segment

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Bangkok, Nov 13-14, 2018

# Supporters

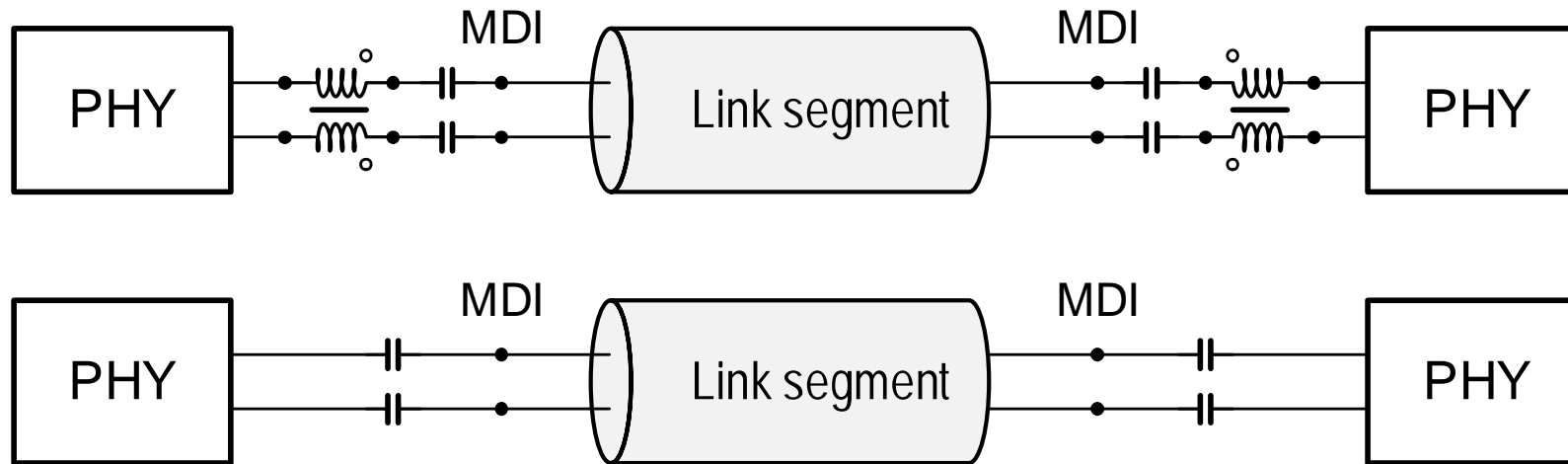
- ▶ Ricky Vernickel (LEONI Kabel GmbH)
- ▶ Christoph Wechsler (Audi)
- ▶ Thomas Müller (Rosenberger)
- ▶ Natalie Wienckowski (GM)
- ▶ Olaf Grau (Bosch)
- ▶ Josef Ohni (MD Elektronik)

# Problem statement



- ▶ Coupling-attenuation is about radiation caused by  $V_{dif}$
- ▶  $V_{com}$  from transceiver module will not be zero
- ▶ We need to specify shielding attenuation separately

# Common-mode handling

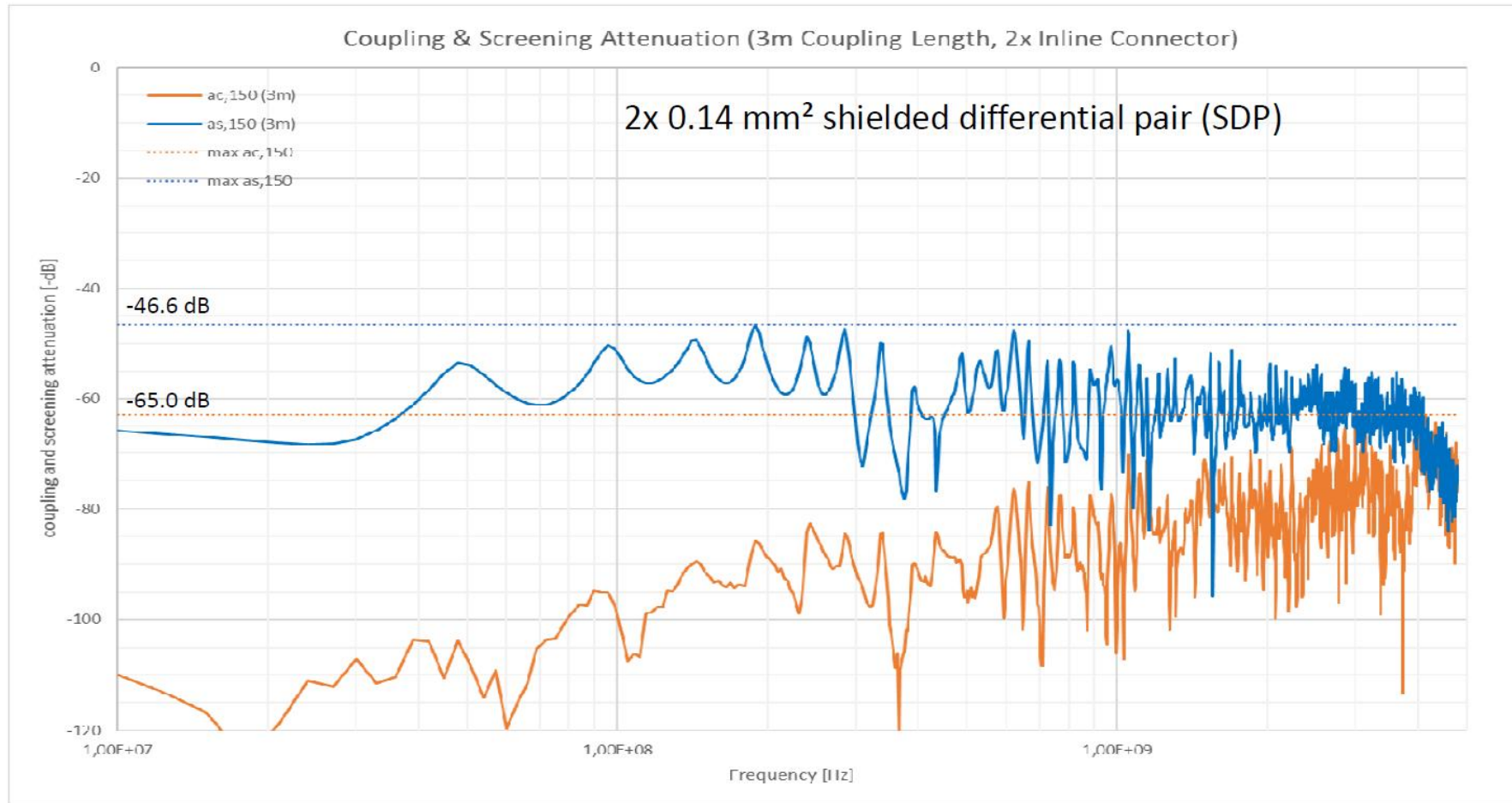


- ▶ Higher-speed PHYs produce more common-mode content
- ▶ A choke suppresses that, but a good choke might be hard to make for 5.6Gbaud
- ▶ Without choke it goes straight to the link segment and gets only suppressed by shielding attenuation

# Other choke considerations

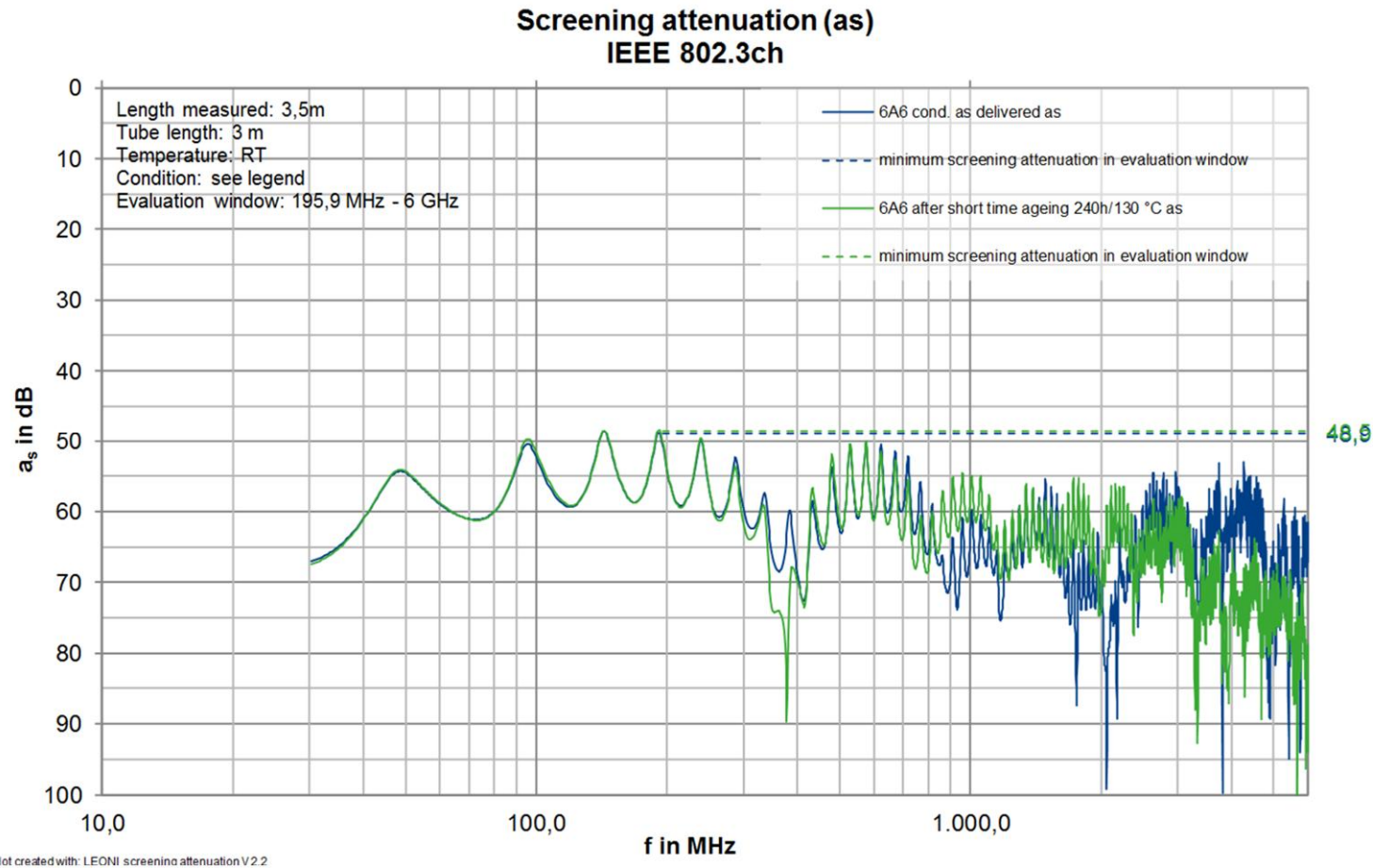
- ▶ Given the shielded cable, the choke might not really be necessary from immunity perspective
  - if shielding attenuation can be guaranteed to be sufficient

# Previously measured results (I)



- ▶ DiBiaso\_Bergner\_3ch\_01\_1117.pdf
- ▶ Shielding attenuation > 45dB

# Recently measured results



- ▶ Courtesy to Leoni for providing measurement data
- ▶ Shielding attenuation >45dB
  - Before and after aging

# Consequences

- ▶ Common-mode attenuation of 45dB is very similar to mid-range frequency common-mode suppression of 100BASE-T1 and 1000BASE-T1
- ▶ Shielding attenuation does provide attenuation over the whole spectrum
- ▶ This level of shielding attenuation may enable 10Gbps without chokes
- ▶ 2.5Gbps should be considered separately
  - want to enable reduced cost compared to 10Gbps link segments
- ▶ Propose to adopt >45dB shielding attenuation for 5/10Gbps



# Proposal

- ▶ Adopt a shielding attenuation requirement for 2½/5/10Gbps of >45dB for  $f=30\text{MHz}-F_{\text{max}}$

# Motion

# Motion #

- ▶ Move to adopt a shielding attenuation requirement for 2½/5/10Gbps of >45dB for  $f=30\text{MHz}-F_{\text{max}}$
- ▶ M:
- ▶ S:
- ▶ Technical  $\geq 75\%$ )
- ▶ Y: N: A:
- ▶ Motion ...