



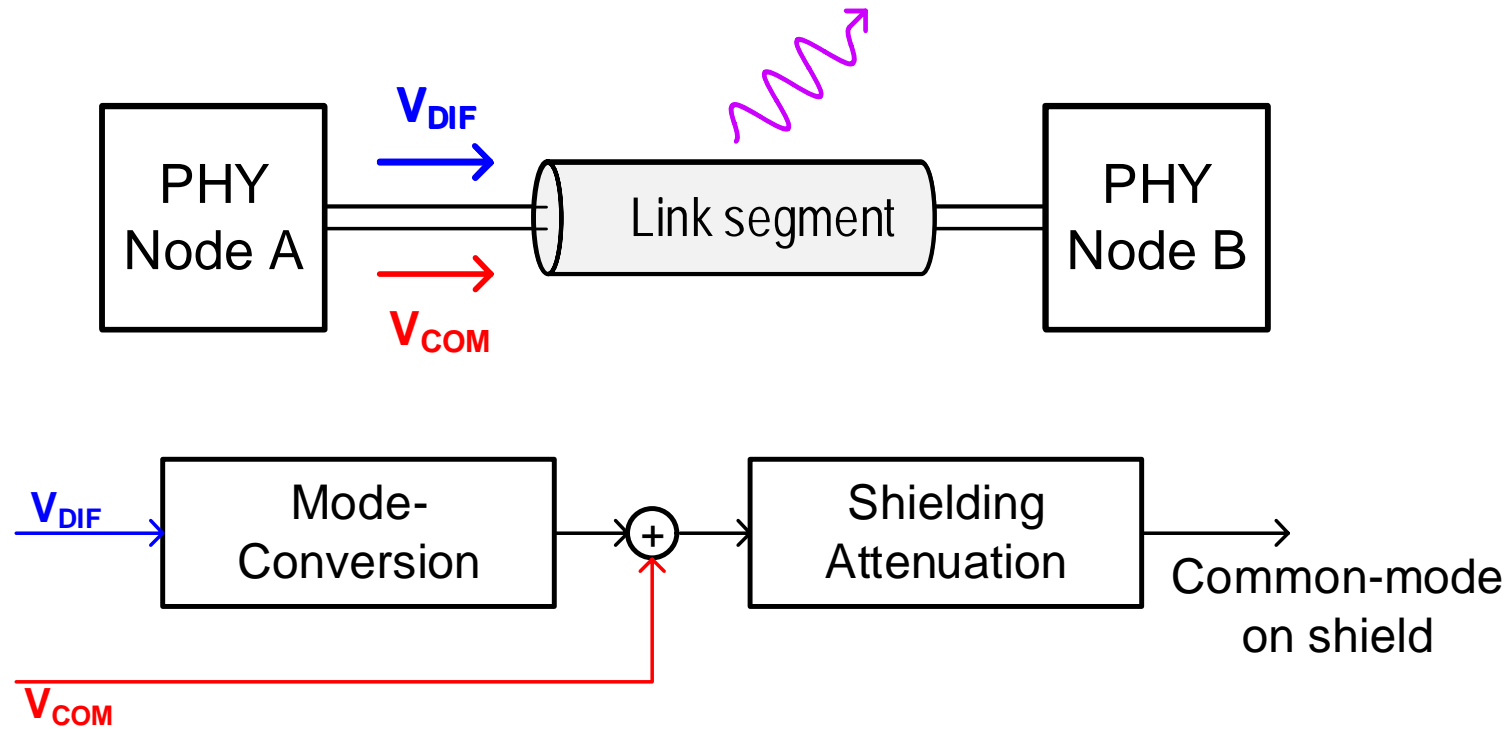
Coupling & shielding attenuation

Gerrit W. den Besten
NXP Semiconductors
Ad-hoc October 31, 2018

Supporters

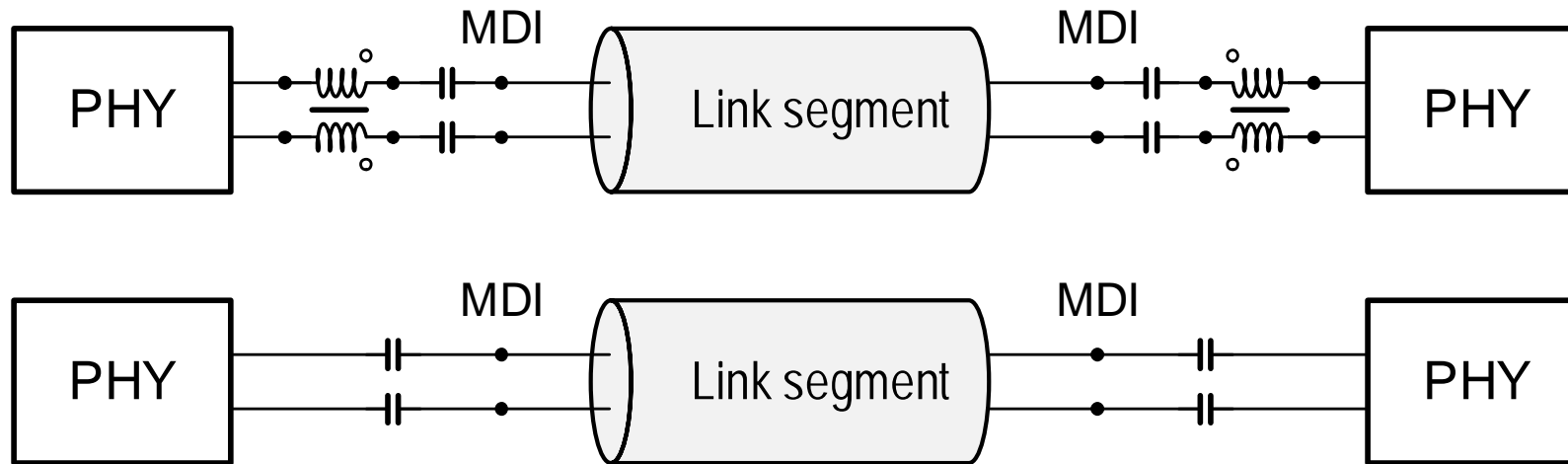
- ▶ Ricky Vernickel (LEONI Kabel GmbH)

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

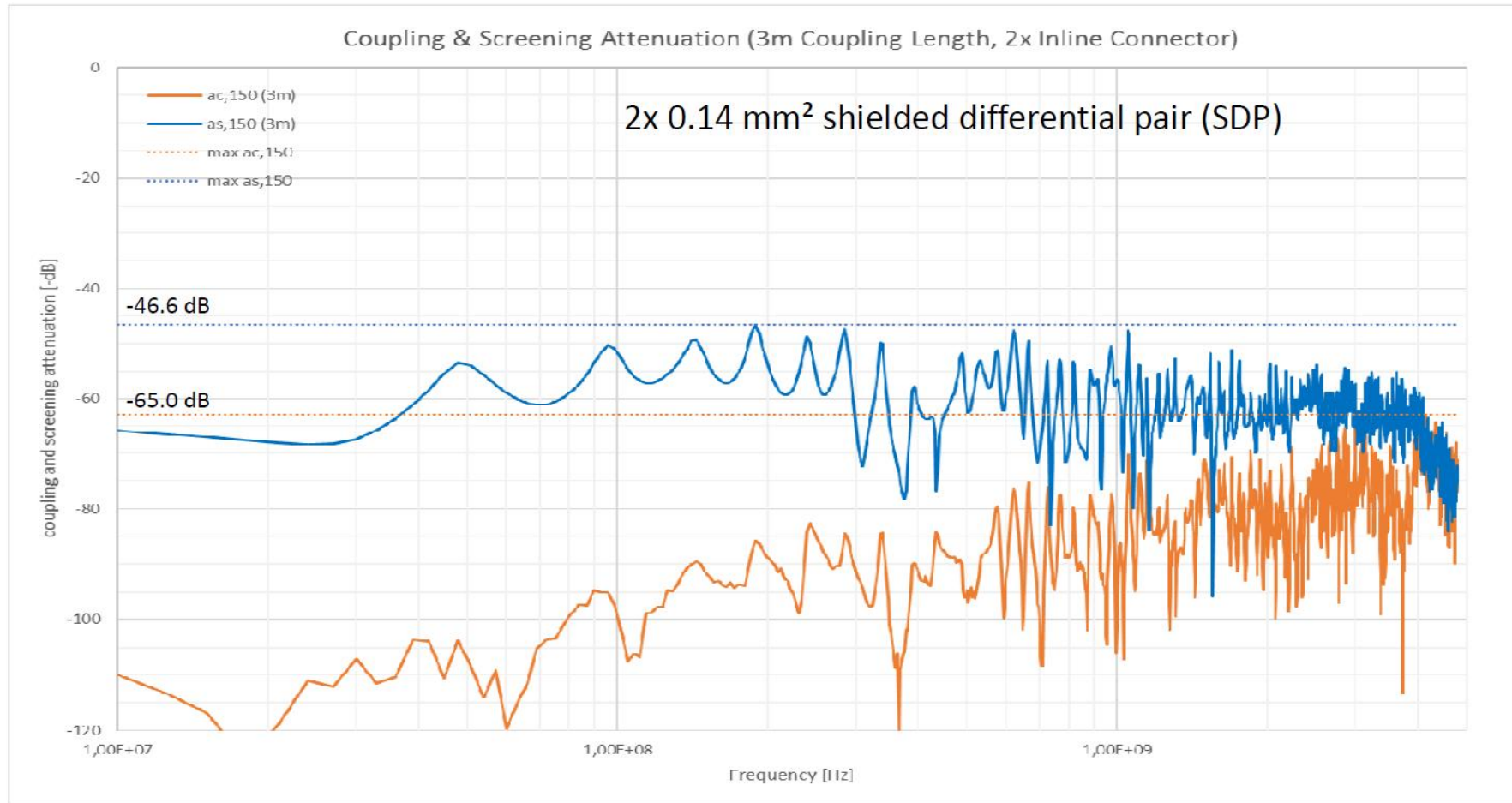


- ▶ Higher-speed PHYs produce more common-mode content
- ▶ A choke suppresses that, but a good choke might be hard to make for 5.6Gbaud
- ▶ Without choke it goes straight to the link segment and gets only suppressed by shielding attenuation

Other choke considerations

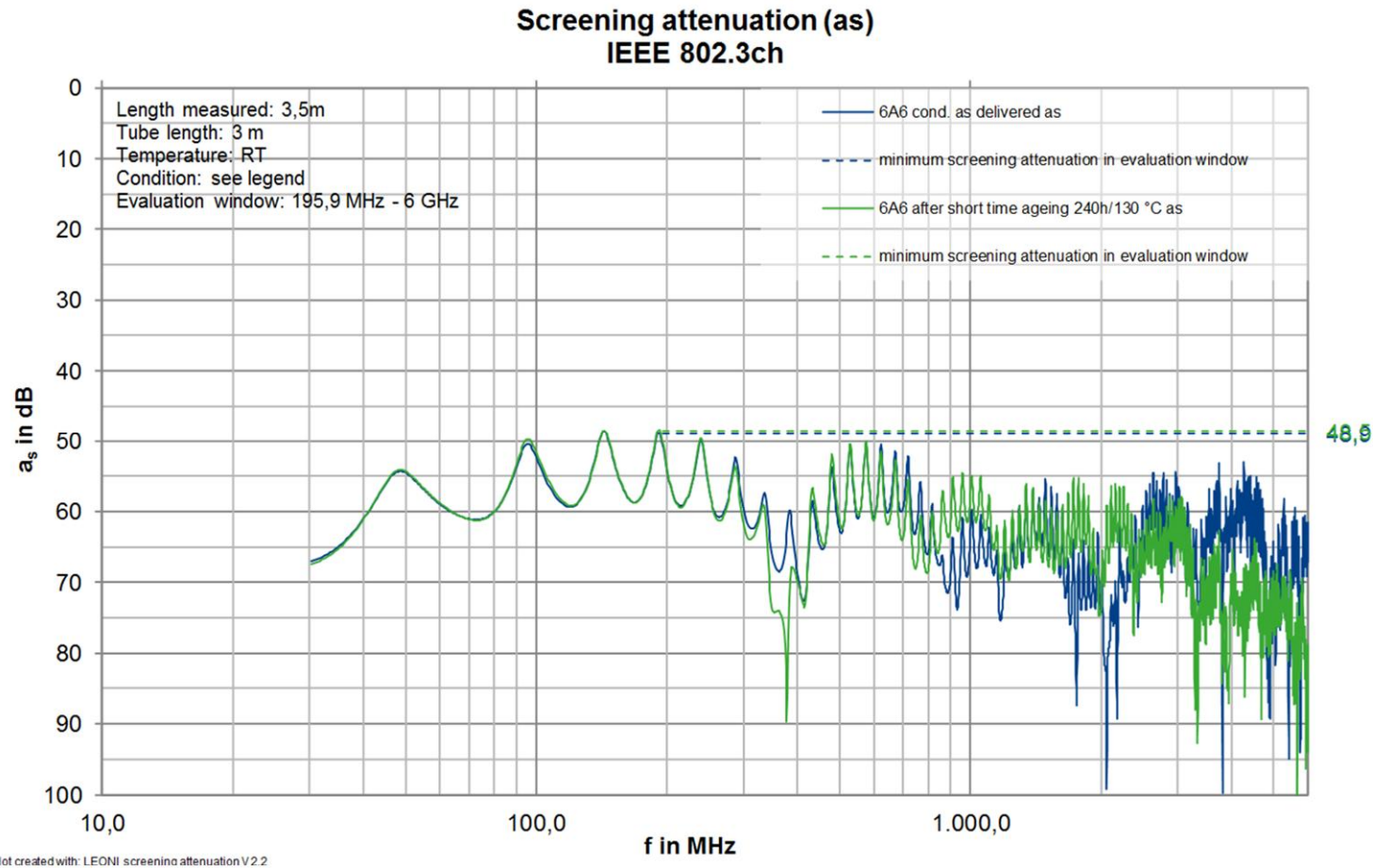
- ▶ Given the shielded cable, the choke might not really be necessary from immunity perspective
 - if shielding attenuation can be guaranteed to be sufficient

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 >45 dB
 - 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

Motion

Motion

- ▶ Move to adopt a shielding attenuation requirement for 5/10Gbps of $>45\text{dB}$ for $f=1\text{MHz}-F_{\text{max}}$
- ▶ M:
- ▶ S:
- ▶ Technical $\geq 75\%$)
- ▶ Y: N: A:
- ▶ Motion ...