
Rosenberger

IEEE 1000BASE-T1 Alien crosstalk measurements

Thomas Müller, Stephan Kunz, Jiaren Zhou (Rosenberger)

Supporters:

Stefan Schneele (Airbus Group)

Kirsten Matheus (BMW)

Mehmet Tazebay (Broadcom)

Stefan Buntz (Daimler)

Rainer Pöhmerer (Leoni)

Martin Huber (MD Elektronik)

Christopher Mash (Marvell)

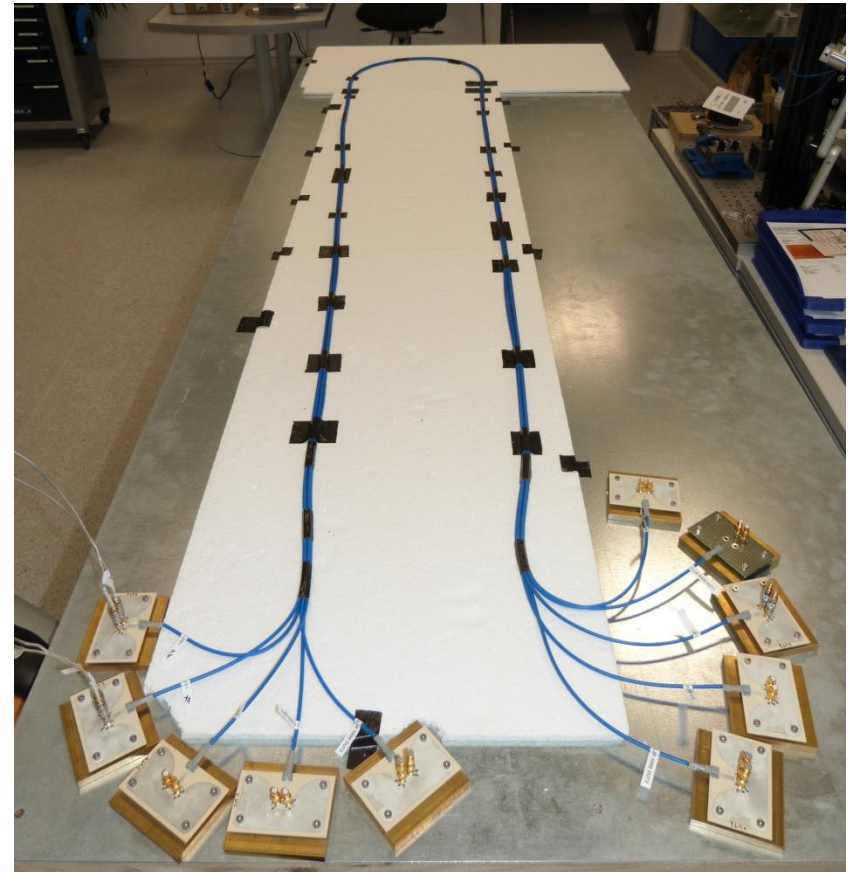
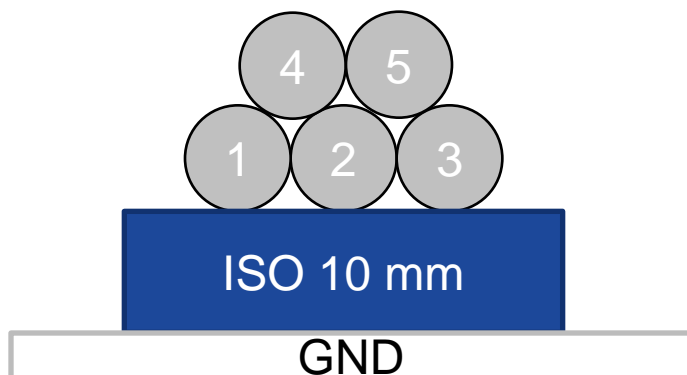
Sujan Pandey (NXP)

Xiaofeng Wang (Qualcomm)

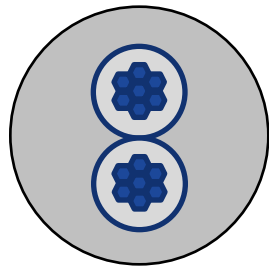
Mandeep Chadha (Vitesse)

- Alien crosstalk measurement setup
- Measurement results
- Conclusion

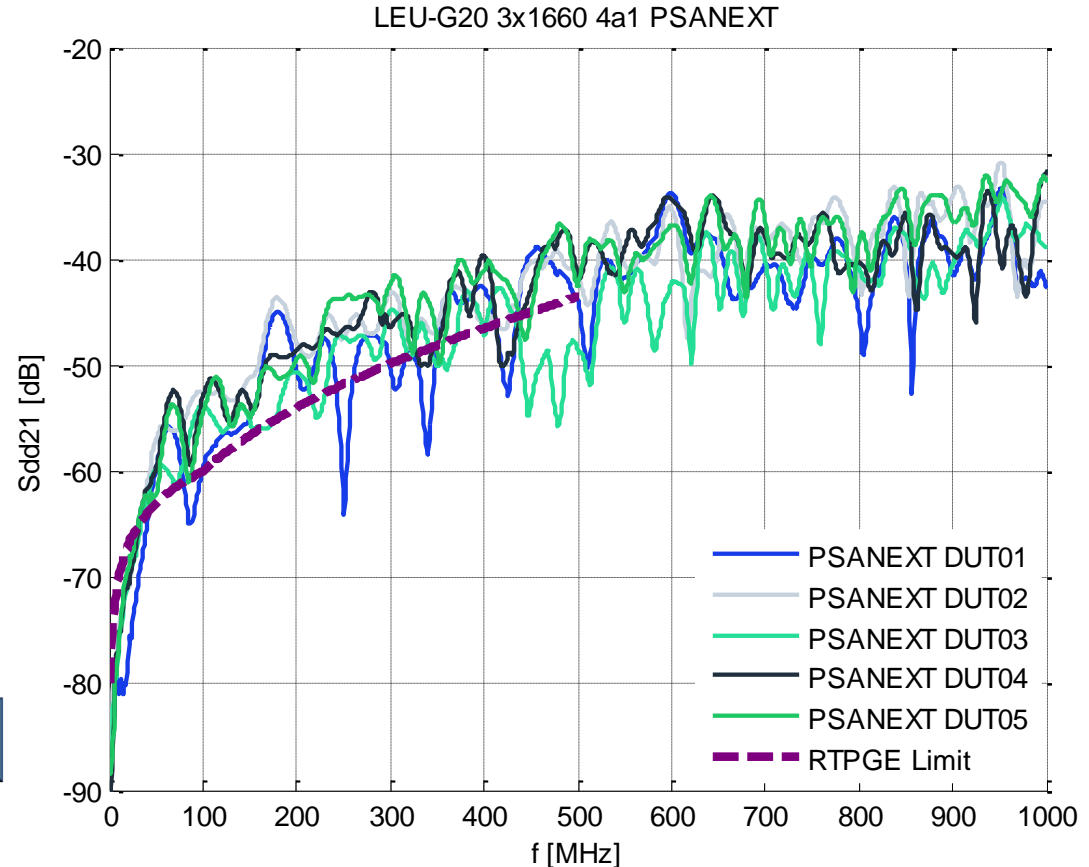
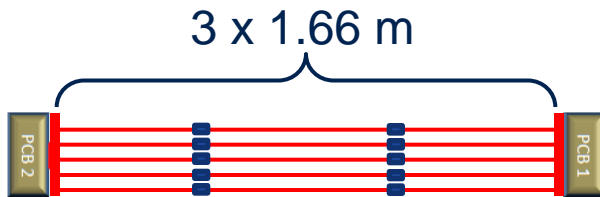
- Four port VNA measurement setup
- Four around one configuration
- With 10 mm isolation over conducting ground
- Measurement fixtures to SMA (grounded)



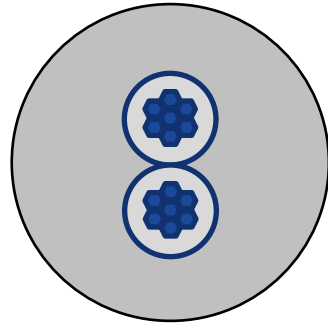
- Results presented in Indian Wells – PSANEXT



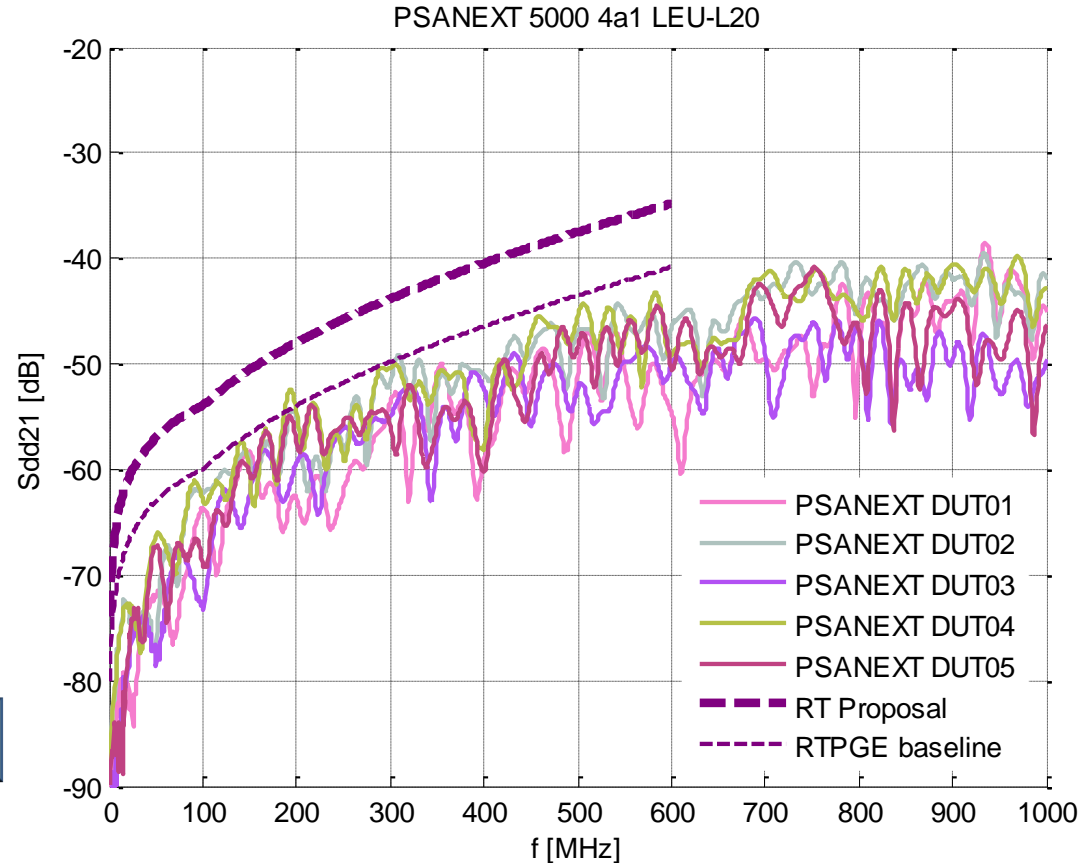
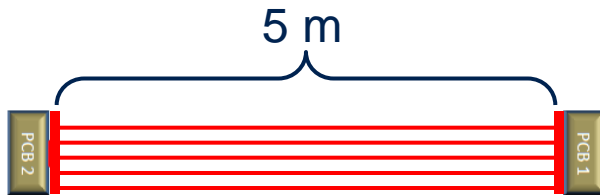
$2 \times 0.14 \text{ mm}^2$
 $D = 3.2 \text{ mm}$



- Latest cable generation – PSANEXT

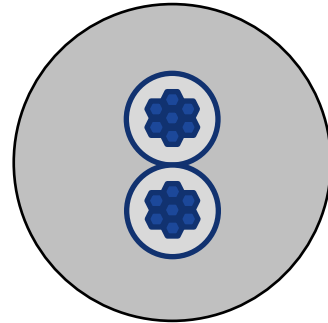


2 x 0.14 mm²
D = 4.0 mm

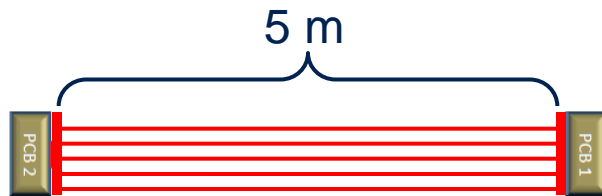


- 10 dB improvement but no margin left (e.g. inline connectors)

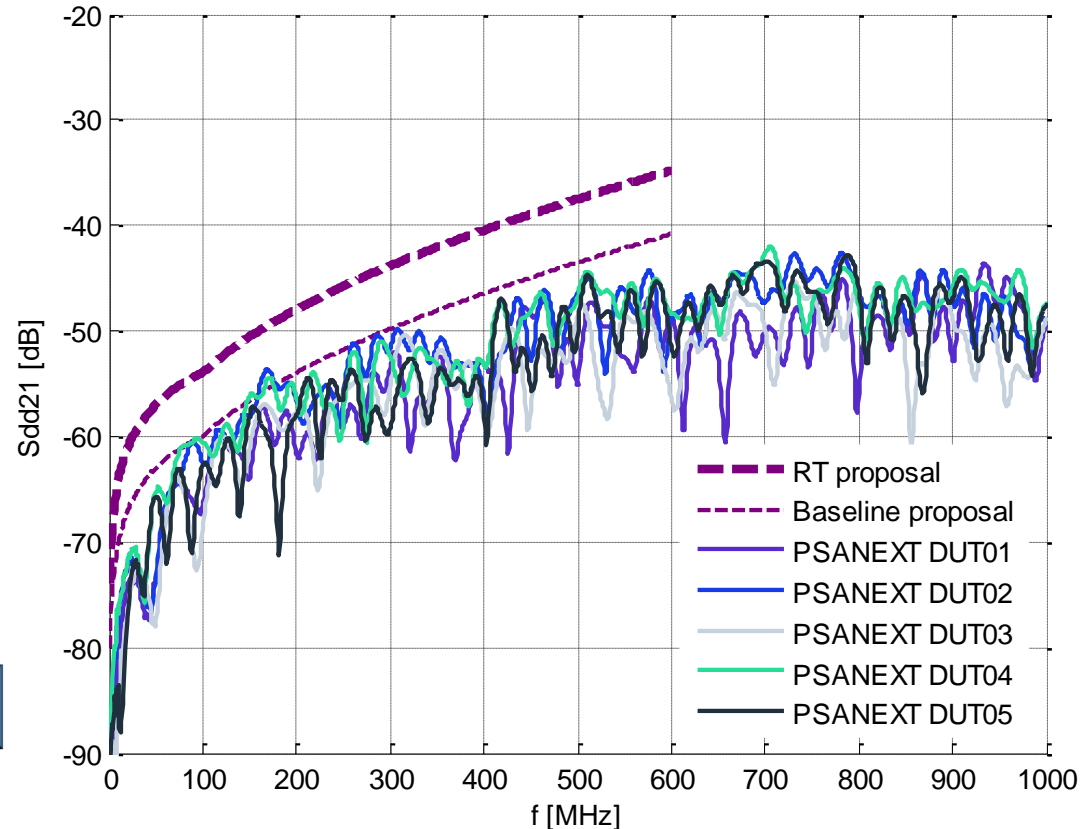
- Latest cable generation – PSANEXT



$2 \times 0.14 \text{ mm}^2$
 $D = 4.0 \text{ mm}$



PSANEXT 5000 4a1 LEU-L20 10.03.14



- Second set of samples shows comparable results

- According to feedback from PHY vendors, the SNR is only slightly affected by reducing the PS-NEXT baseline proposal by 6 dB
(less than 0.3 dB, Effects_new_NEXT_adhoc0226.pdf, Xiaofeng Wang)
- Proposed baseline change allows to use typical solid jacketed automotive cables and allows to reduce cable diameter
- Relaxation gives some margin for series production variation, additional connectors and variations within the wiring harness

■ Baseline proposal PSANEXT

Existing baseline

$$60 - 10 \log\left(\frac{f}{100}\right) \quad [1 \text{ to } 100 \text{ MHz}]$$

$$60 - 15 \log\left(\frac{f}{100}\right) - 6 * \left(\frac{f-100}{400}\right) \quad [100 \text{ to } 600 \text{ MHz}]$$

Proposed baseline

$$54 - 10 \log\left(\frac{f}{100}\right) \quad [1 \text{ to } 100 \text{ MHz}]$$

$$54 - 15 \log\left(\frac{f}{100}\right) - 6 * \left(\frac{f-100}{400}\right) \quad [100 \text{ to } 600 \text{ MHz}]$$

