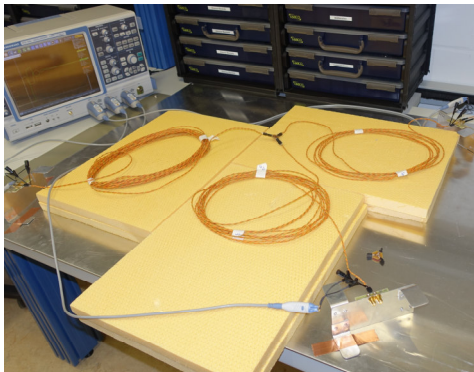
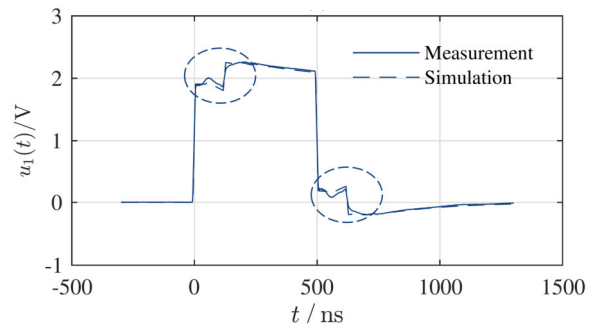


Forschungsbericht



Setup with star point connected to three transmission lines



Results with signal reflections reduced significantly

Reflexionsoptimierte Sternpunkte für automotive Bussysteme

In this work we present a promising methodology in order to reduce unwanted signal reflections at star points. The latter are widely used in modern automotive bus systems. Particularly, it is shown that signal integrity can be increased significantly by the implementation of some conventional passive components. Further, simple rules for an adequate design as well as selection of these components have been derived. The effectiveness of this approach is well confirmed by both measurements as well as simulations.

A quite important part of this work is based on simulations. Particularly, simulations allow for a reliable assessment of the signal integrity at a very early stage. Therefore, highly accurate transmission line models have been determined, which take into account the frequency dependence of both the complex line impedance and the complex propagation constant.

Reflection-Optimized Star Topologies for Automotive Bus Systems

Future work will concentrate on the Pareto-optimization of the modified star points and the presented layout rules. For instance, the utility function of the decision maker as well as the relevant key performance indicators needs to be defined. Also, more powerful simulation tools will help in order to derive even more accurate solutions and thus to improve the signal integrity of automotive bus systems sustainably.

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