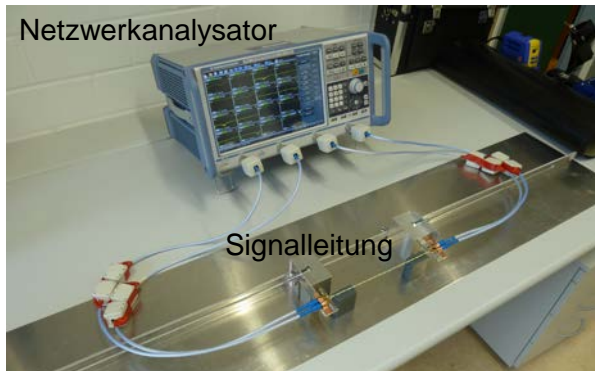
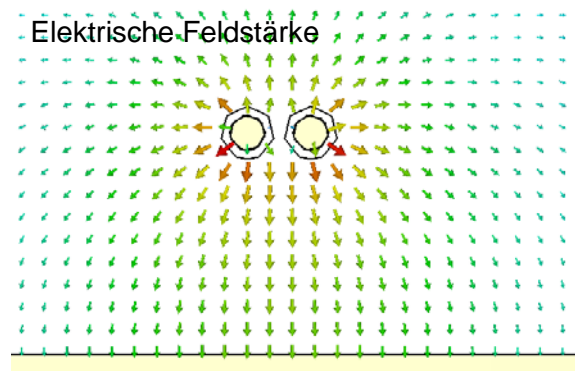


Forschungsbericht



Messaufbau mit Netzwerkanalysator und Signalleitung



Simulation der elektrischen Feldstärke im Gleichtakt

Entwicklung und Validierung eines Aufbaus zur Vermessung der Hochfrequenzeigenschaften von Leitungen im Automobilbereich

Automotive electronic systems are rapidly advancing both in complexity and diversity. A multitude of sensors and actors are used for various functions. High-speed data transmission within the vehicle is generally realized by bus-based networks. Here, wired solutions such as controller area network (CAN), FlexRay and Ethernet are expected to dominate in the future due to the tremendous need for reliability. Simulations are mandatory at an early stage of development in order to predict the electromagnetic compatibility (EMC) of these bus-systems in general as well as the signal integrity in particular.

In this work we presented an accurate measurement setup for determining the transmission line parameters of automotive UTP cables. The complex line impedance and the complex propagation constant were measured for both differential mode as well as common mode.

Accurate Measurement of Transmission Line Parameters for Automotive Ethernet

The extraction of transmission line parameters from measurements was performed in frequency domain. Furthermore, the measured results were validated in time domain, both using measurements and simulations. Generally, a good agreement was observed. Future work will extend the valid frequency range to even higher frequencies. The accuracy of the measurement setup will be increased for common mode also. The presented setup is expected to be very useful to analyze and predict the EMC of automotive bus-systems.

Kontaktdaten

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