“Wireless Cable”, realistic over-the-air testing of vehicles

Author(s) - Institution(s):
Christopher Schirmer, TUI
Mario Lorenz, TUI
Wim A. Th. Kotterman, TUI
Rainer Perthold, IZT GmbH
Markus H. Landmann, Fraunhofer IIS
Giovanni Del Galdo, Fraunhofer IIS

Corresponding author email: wim.kotterman@tu-ilmenau.de

Corresponding WG group: TWGV, TWGO

Abstract:

Handheld devices can be tested Over-the-Air under realistic yet repeatable conditions in a laboratory environment due to their limited size. In fact, wave field synthesis can be applied to emulate the spatial characteristics of the radio propagation channel. However, for electrically large devices under test, such as vehicles, wave field synthesis is prohibitively expensive due to the number of emulation channels required.
In this contribution, we experimentally show that wideband application of the radiated two-stage method, nicknamed “wireless cable”, allows for a 40 d B isolation over 80 MHz between two antennas installed on vehicles. With this method, self-interference and interference, as well as co-existence with various other systems installed on the vehicle, can be accounted for in a realistic MIMO Over-the-Air test.