

SOURCE: INESC-ID / Instituto Superior Técnico,  
University of Lisbon, Portugal  
Centre of Technology and Systems, UNINOVA

## **Geometry-Based Polarised Static Off-Body Channel Model**

Abstract—The paper presents a theoretical polarised off-body channel model, based on geometrical optics and modified Uniform Theory of Diffraction. It takes into account Line-of-Sight propagation, reflections and diffractions, and allows arbitrary antenna orientations, polarisations and radiation patterns. The model is used to simulate an indoor environment scenario, where the transmission between co- and cross-polarised antennas is analysed. The obtained results show that significantly stronger signal is received by the co-polarised antenna, as compared to the case when the antennas are orthogonal, where different propagation mechanisms dominate the two channels. Statistical analysis of the simulated signal shows agreement with previously reported measurements. The polarisation characteristics of the channel are analysed, where the low signal depolarisation is observed for the considered scenario.

Kenan Turbic, Luis M. Correia, Marko Beko  
Rua Alves Redol 9  
1000-290 Lisbon, Portugal  
Phone: +351 213 100 468  
Fax: +351 213 100 472  
Email: kenan.turbic@tecnico.ulisboa.pt