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Simulation Study of the Polarization Behavior for a WTTx Scenario at 28 GHz

A simulation study by means of two different commercial ray-tracing tools is presented for the WTTx use case. The study focuses on the polarization behavior at 28 GHz. The simulation results indicate similar behavior in the co-polar domains, however, in the cross polar domain the tools provide significantly different results among them and to the 3GPP model. Another observation is that the simulation results indicate slightly lower pathloss for the vertical to vertical polarization domain in particular in non-line of sight situations. We conjecture that the behavior of the reflection coefficient and the Brewster effect in the horizontal polarization domain on vertical walls, is the main reason for the observed differences between the two co- polarization domains. Measurement results are required to confirm our observations in particular as walls in reality are not smooth and diffuse scattering might create a different behavior with respect to polarization.

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