

A statistical UWB-RFID Backscattering Channel Model incorporating propagation and tag variability

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Abstract:

In a backscattering based UWB-RFID system, the signal emitted by the reader passes through the propagation channel, is received and modulated by the tag and re-emitted through the same propagation channel towards the reader. The statistical model here described intends to combine antenna randomness (as modelled in our previous TD(11)01051 Lund paper) and propagation channel randomness, in order to realistically evaluate the two-way path loss. It is a full polarized model, able to take into account the channel polarization and the polarized and directional tag backscattering matrix. The impact of the tag and propagation channel statistical characteristics on the effective tag performance relative to an ideal tag in the backscattering link is examined in a few cases, based on a simplified directional model of the multipath propagation.