

Comparing Off-Body Dynamic Channel Model with Real-Time Measurements

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Abstract:

This paper presents a novel approach for modelling the influence of body dynamics on the radiation pattern of wearable antennas in Body Area Networks (BANs), particularly in off-body radio channels. The modelling of wearable antennas in BANs has been separated into antennas in the vicinity of the body (full wave simulations), including body dynamics (motion capture), and an indoor environment (clusters of scatterers). An anechoic and indoor scenarios are simulated, for a walking body, and for 3 on-body antenna placements (i.e., Arm, Head and Torso). The comparison of a path loss between simulated results and real-time measurements shows a good agreement, with an average difference of 4.5 dB (standard deviation of 0.1 dB) for the example case of the node on the Head, in an indoor environment.