Statistical Model for Dynamic Off-Body Channels

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Abstract:

This paper presents the statistical model for off-body radio channels in an indoor multipath environment. The model considers the distance dependent mean path loss, and describes body shadowing and fast fading components in a statistical way. The modelling of wearable antennas in Body Area Networks (BANs) has been separated into antennas in the vicinity of the body (full wave simulations), including body dynamics (taken from motion capture analysis), and the environment (clusters of scatterers). A Geometrically Based Statistical Channel model adapted to the body environment is used. Several body postures and orientations, and eight different antenna placements, are analysed of a BAN operating in 2.45 GHz. The body shadowing component is described by the average standard deviation equal to 4.6 dB, being 0.9 dB higher than the fast fading one