

Path Loss Analysis in Off-Body Channels in Indoor Environment

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Abstract:

This temporary document describes an analysis of path loss in off-body channels in an indoor environment. The influence of body orientation and on-body antenna placement on path loss in off-body communications as well as of different bodies has been investigated. Five static scenarios, six distances between body and antenna and eight body orientations were analysed; moreover, two dynamic scenarios were investigated. The smallest values of mean path loss were obtained for the dynamic scenario, which involved walking in a fixed place with the transmitting antenna located on the right wrist. For a body with smaller dimensions mean path loss equals 45.5 dB (with a standard deviation of 7.8 dB), while for a larger body it is 47 dB (standard deviation of 9.3 dB). The lowest path loss exponent values are obtained also for this scenario. This exponent is 0.4 and 0.5 for larger and smaller bodies, respectively. The analysis of real walking scenarios have shown that, during body movement, a large difference of path loss values may occur – up to 33 dB in the time interval of 1 s.