

Multi-antenna mobile terminal diversity performance in proximity to human hands under different propagation environment conditions

Abstract

The effective diversity gain (EDG) of a four-element planar inverted-F antenna array, which operates at 3500MHz in the proximity to one hand in data-mode grip and two hands in browsing-mode grip, is predicted using a recently developed hybrid stochastic-electromagnetic methodology. The dependency of the EDG results on the distorted radiation patterns due to the hands and on the cross-polarisation power ratio and incident wave parameters of the propagation environment is demonstrated. The results indicate that the generalised selection combining technique, i.e. by using only the best two out of four antenna elements at every channel realisation, achieves 2dB higher EDG than the selection combining and only 1dB less than the maximal ratio combining techniques.