MIMO Reference Antennas Performance in Anisotropic Channel Environments

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Abstract:

The currently used technology for the new generation of wireless communication, Long Term Evolution (LTE), requires multiple antennas at both receiver and transmitter to improve the system performance. The Multiple Input – Multiple Output (MIMO) definition of input and output is related to the radio link and in this work the channel aspect focus, is on the downlink. The over the air evaluation of MIMO devices is still being defined within several standard bodies. The objective of this work is revisiting the radiated performance of the MIMO reference antenna within the constraints of anisotropic channel environments. Previous work had being do ne on isotropic channel environment, where these antennas fulfill the MIMO antenna figures of merit. This work will extend this evaluation to channel environments with non-uniform power angular spreads.
The major difference under such conditions is the antennas' orientation in the three dimensional space, leading to a statistical description of typical antenna parameters such as Mean Effective Gain (MEG), Branch Power Ratio (BPR) and correlation.