Dithanon Khrutmuang 2012: Antenna Selection for Multiantenna Wireless Channels with Mutual Coupling. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Wiroonsak Santipach, Ph.D. 60 pages.

This thesis studies and presents antenna selection methods for wireless channels with multiple transmit and/or receive antennas. Selecting antennas that best suits status of current channel state increases the performance of communications, for example, increasing channel capacity or decreasing outage probability. The proposed methods are based on and improved upon the selection method by Gorokhov. The difference from previous work is the use of mutual impedance in addition to channel information to select set of antennas. In this research, model for fading channel includes spatial correlation and mutual coupling among antennas installed close to one another. Antenna array is assumed to consist of side-by-side dipole antennas and to have very limited space. The proposed selection has less computational complexity than Gorokhov's by reducing the number of potential selection of antennas with thresholding on mutual impedance. Simulation results have shown that the proposed methods perform close to the optimum, which is obtained by exhaustive search. In some cases, selection complexity can be reduced by 100 folds from that of exhaustive search.

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