ABSTRACT

Improved bit error rate (BER) significantly in wireless communication systems (wireless communication) can be achieved by using spatial diversity with maximal ratio combining. Constraints of this system is that the increase in the BER system is very dependent on the magnitude of spatial fading correlation between array elements.

This final project will analyze the effect of angle spread of the signals that come in an array, the array spacing and the number of array elements to the amount of spatial fading correlation (spatial fading correlation) between the elements of the array. Furthermore, analyzing the effect of fading correlation on the BER. Simulation effect of angle spread, spaced array and the number of array elements with the help of software Matlab.

Research shows that the angle spread and array spacing affects the fading correlation values that affect the BER. For a target BER of 10-3 Eb / No required to angle spread 3o, 15o and 30o respectively by 33 dB, 17 dB and 12 dB for Gaussian and 34 dB, 19 dB and 14 dB for the Laplacian. Spaced array also affect the value of the correlation fading affecting BER. For a target BER of 10-3 Eb / No required for the array spacing 0.5λ, 1λ and 2λ respectively by 33 dB, 26 and 19 dB for Gaussian and 18 dB, 13 dB and 11 dB for the Laplacian. The number of array elements does not affect the value of fading correlation. Improvements BER for the number of array elements are increasingly due to the increasing magnitude of Eb / No output maximal ratio combining (MRC). For a target BER of 10-3 Eb / No required for the number of array elements 2, 3 and 4 respectively of 12.5 dB, 9 dB and 7 dB for Gaussian and 18 dB, 15 dB and 12 dB for the Laplacian.

Keywords: spatial diversity, linear array, spatial fading correlation, maximal ratio combining