

Title: Wireless MIMO channel capacity using double stage diversity technique

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Abstract: This paper presents an investigation on wireless MIMO channel capacity effect based on double stage diversity technique for indoor environments. In this investigation, the channel capacity is improved by using a novel spatial diversity technique, which originally requires more space to achieve higher data rate. A new configuration (double stage technique) of spatial diversity and polarization diversity is introduced in this investigation, and measured for an indoor environment. Comparative analyses on the linear and X-polarized configurations of the antenna has been conducted for spacings between 0.5 and 2? at 2.4 GHz. The results show that the channel capacity for the double stage diversity configuration could achieve more than 5.6 b/s/Hz. Furthermore, the space between antennas could be reduced up to 150 %, compared to a linear polarized configuration. Thus, the double stage diversity technique has high potential for use in designing a compact system of wireless MIMO communication infrastructure, especially for LTE systems.