

Propagation Characteristics Investigation in Measured Massive MIMO Systems at 1.4725 GHz

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Abstract—Massive multiple-input multiple-output (MIMO), as a candidate technology for the 5th generation (5G) of wireless communication systems, theoretically presents a highly promising solution to meet the demanding requirements of even higher network capacity, throughput, spectrum- and energy-efficiency than ever before. Recently a significant number of propagation and channel modeling papers have reported. However, few investigations have been done on Massive MIMO channels equipped with more than 100 of antennas. A thorough knowledge of a reliable and realistic channel model serves as the enabling foundation for practical design and testing of the Massive MIMO communication systems, so Massive MIMO channels are of great current interest. This paper provides a critical review of the fading correlation derived from propagation measurements. More channel parameters like rms delay spread, correlation bandwidth, and angle power spectrum are detailedly discussed. Examples are given and comparisons are made of results from analyzes in a typical open stadium and meeting hall scenarios respectively at 1.4725 GHz. These results reveal the fading correlation characteristics in the line of sight (LOS) component dominant environment of Massive MIMO channels, and provide the basis for the practical deployment of Massive MIMO systems.

Keywords—Massive MIMO, wireless channel, channel measurement, Multipath component, frequency correlation, Angle of depart.



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