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Link Performance Evaluation and Channel Propagation for mmWave Systems

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This paper presents a link performance and channel propagation study for mmWave systems at 60 GHz. The study is based on both mmWave channel sounding and wireless modem measurements. The system performance is characterized by means of common metrics such as packet delivery rate, Signal to Noise Ratio (SNR) and throughput. Furthermore, the channel measurements are mostly focused on the characterization of the angular spread and the diffused scattering properties of mm-Wave systems. The effect of spatial and polarisation diversity/multiplexing is explored, considering various modulation and coding schemes (MCS). Based on our findings, spatial diversity mostly impacts the quasi/non- Line-of-Sight (LoS) locations, whereas the gain from polarization diversity is more significant for horizontal polarized transmitters. Furthermore, a relatively small angular spread is observed when high-directional antennas are employed and the impact of diffused scattering is more severe for rough wall surfaces and relatively small transmitter-receiver separation. Finally, results from both campaigns depict similar SNR trends, thus empowering the validity of our results.

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