To overcome a multipath fading environment with low complexity and to achieve wireless broadband multimedia communication systems, orthogonal frequency division multiplexing (OFDM) transmission scheme is used. OFDM is one of the applications of a parallel data transmission scheme, which reduces the influence of multipath fading. The performance of OFDM can be improved further using concept of spatial diversity Multiple Input Multiple Output. The paper explains the performance of MIMO OFDM under the Rayleigh channel, also it uses different guard interval with modulation schemes as 4-QAM. It shows that by using OFDM with SISO and MIMO, remarkable performance is shown in terms of Bit Error Rate (BER).

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**Index Terms**

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**Keywords**

Enter Multiple Input Multiple Output (MIMO) orthogonal frequency division multiplexing (OFDM) (BER) Guard Period Bit Error Rate Cyclic
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