

## Performance Analysis in 5th Generation Massive Multiple-Input-Multiple-Output Systems

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**Abstract :** Fifth generation wireless networks guarantee significant capacity enhancement to suit more clients and services at higher information rates with better reliability while consuming less power. The deployment of massive multiple-input-multiple-output technology guarantees broadband wireless networks with the use of base station antenna arrays to serve a large number of users on the same frequency and time-slot channels. In this work, we evaluate the performance of massive multiple-input-multiple-output systems (MIMO) systems in 5<sup>th</sup> generation cellular networks in terms of capacity and bit error rate. Several cases were considered and analyzed to compare the performance of massive MIMO systems while varying the number of antennas at both transmitting and receiving ends. We found that, unlike classical MIMO systems, reducing the number of transmit antennas while increasing the number of antennas at the receiver end provides a better solution to performance enhancement. In addition, enhanced orthogonal frequency division multiplexing and beam division multiple access schemes further improve the performance of massive MIMO systems and make them more reliable.

**Keywords :** beam division multiple access, D2D communication, enhanced OFDM, fifth generation broadband, massive MIMO

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