

## ABSTRACT

Future telecommunications needs will increase, especially for multimedia based services and high speed data communications. Wide bandwidth and large capacity becomes very important. However, there are limitations on the available frequency spectrum, it necessary to have a new system that can give more efficient frequency spectrum. Full Duplex wireless communications system is a radio communication which transmit and receive signals can be carried out simultaneously at the same time and frequency.

Toward the next generation of communication technology is experiencing a transition period. Where user equipment does not support the technology but BS have been using Full Duplex with multiple antennas in order to provide a good performance for uplink and the possibility to increase the capacity downlink in order to serve the needs of better capacity.

In the previous research the Full Duplex MIMO system uses low frequencies for wireless point to point communications. For next generation technology we need higher frequencies. The 60 GHz frequency band is a good candidate for short and high speed data communications. The proposed system uses data transmission on Full Duplex system with multi user SIMO (MU-SIMO). In this research will make MU-SIMO Full Duplex communication model with K user single antenna that communicate towards uplink (Base Station) with multiple antenna. The effect of self-interference on the transceiver is simulated from 10% to 100% and takes into account the mutual coupling value of the antenna.

Increasing the number of users on a full-duplex (FD) multiuser multiple-input multiple-output (MU-SIMO) technique increases the resulting BER, which means lower system performance. The higher the self-interference value due to signal leakage, the smaller BER will be obtained because of signal leakage is interfere the performance of the system, while the mutual coupling value on the antenna has little effect on the performance of the BER system because its value is relatively small close to zero. Therefore this calculation can be neglected because in designing antenna should have taken into account small value of mutual coupling. Multi user SIMO have better BER performance 13 times better than multi user SISO performance on Full Duplex Single Channel communication.

Keyword : MU-SIMO, Self Interferenc, Mutual Coupling, Full Duplex Single Channel