

## ABSTRACT

WCDMA is a wireless communication system, cellular technology is one of the 3<sup>rd</sup> generation (3G) which can provide services with high bit rate. So not only voice and data packets but it is also possible pictures and video with high quality transmission. WCDMA system is used to meet the needs of bandwidth and can provide data rates of up to 2 Mbps.

But there are major obstacles to implementing a wireless communication system, the constraint is that the signal decreased performance due to fading. Some studies claim that the technique of multiple input multiple output (MIMO) can increase the performance of wireless communication system in this case is a WCDMA communication system.

The result of the analysis was done by using MIMO DSTBC in system WCDMA is much better against the WCDMA system with SISO. In order to reach the BER  $10^{-4}$  WCDMA systems that use MIMO Eb/No required 9.6 dB in conditions of a user and a user moving at 3 km/hour. As for the WCDMA system without using MIMO DSTBC 19.5 dB Eb/No required for the same condition. WCDMA system performance using MIMO DSTBC also be decreased in line with the number of users and increase the speed of moving user.

*Keywords: MIMO, DSTBC, WCDMA*