

ABSTRACT

WCDMA (Wideband Code Division Multiple Access) is a third-generation cellular technology (3G) that is developed of second generation (2G). The advantage that felt is large bandwidth that is equal to 5 MHz. Various techniques have been proposed and developed by people to be implemented on mobile positioning location. TOA, TDOA, AOA, RSS, or a hybrid technique that combine two or more techniques are some techniques that can be applied.

TDOA (Time Difference of Arrival) is one technique that uses a ≥ 3 Base Transceiver Station (BTS) to determine the estimated location of MS, which one BTS acts as a reference. In this research, used Chan-Ho algorithm that can be used to solve non-linear parabolic equation method results from TDOA.

The results of this research indicate that the position of the MS to the BTS effect on the success of the position. Simulations show that if the MS is closer to the reference BTS, the error is higher. This is due to the distance between the MS to another BTS became more far and different signal arrival time greater. Because the cross correlation process isn't selective to choose the signal between the original signal, reflection, and interference, then the results of the cross correlation of two signals was going to produce a large error. Positioning systems do not work as well in Rayleigh Fading channel, thus it required the addition of techniques to overcome fading. The more active users per cell, the greater the value of RMS error. Value of Eb/No 10 dB is the minimum value that can be used so that the system works well and the success percentage is above 70%. Thus, the accuracy is 67 meters.

Key words: WCDMA, TDOA, Chan-Ho, MS