Kata kunci: EOTD, Sistem Seluler, Positioning, hiperbola

ABSTRACT

The usage of *Global Positioning System(GPS)* in Indonesia has been very populasr, mainly in locating mobility of a taxi in a urban area. But, the usage of GPS is limited by its high cost. Another alternative is using cellular network system. One of Cellular Phone Positioning method is by using *Enhanced Observed Time Difference (EOTD)* method which using arriving signal from *Base Transceiver Station (BTS).*

Mobile Tracking System Using EOTD, needs another additional components in exception the basic cellular networks (MS and BTS) these are LMUs (*Location Measurement Unit*) which has function to inform the MS the signal delivery timing and SMLC (*Serving Mobile Location Center*) which has function to answer User/Subscriber other than that it has function to request information from Mobile Device and LMU.

For evaluating the performance of this positioning method, a simulation is run on a ideal condition in a certain BTS geometry, static MS, moving MS on 10 m/s and 20 m/s. For delay generating, delay magnitude is not affected by doppler shift on doppler shift 6-10 Hz produce delay from 0,369 μs – 0,406 μs and on frequency 20-100 Hz results 0.815 μs of delay. On 10 m/s of speed, the error results 142-152 and on 20 m/s of speed, results 106-151 m. On the same condition, EOTD which uses 2 hyperbolic lateration results maximum error measurement distance 14,8 meter and ETOA which uses 3 circular lateration result maximum error measurement distance 318,58 m.

Keywords: EOTD, Cellular System, Positioning, Hyperbolic