

## ABSTRACT

In the sophisticated globalization era, people's necessity of information services were increasing incredibly. Besides of that, it was needed a communication system which had reliability, flexibility, efficiency, and high availability.

The set of wireless system's problem is limitation of used bandwidth to accommodate many kinds of information. Because of that problem, cellular operator reconstructs a few of BTS (*Base Transceiver Station*) in the dense urban with high level of traffic. The major problem of bandwidth limitation which is faced by operator because nowadays the request of cellular service was increasing rapidly

However interference matter which has been effected by frequency reuse because of the sites adding with splitting way needs to be anticipated. Then this problem needs to be solved with using SFH (*Synthesizer Frequency Hopping*) on BTS to reduce the interference because of frequency reuse. The mechanism system of SFH hops the transmission frequencies. This book will be analyzed the comparison of non hopping system's works and hopping system's works. The comparison analysis consists of the value of hopping frequency to CIR (*Co-channel Interference Ratio*) and BER (*Bit Error Rate*) improvement, the evaluation consisted of *Call Success Rate*, *Drop Call Rate*, *Blocked Call Rate*, and *Handover Failure Rate* parameters to the *Arrival Rate* and the *Holding Time*.

On the same CIR value (25 dB) for frequency hopping, there is a significant improvement from  $BER=9 \times 10^{-4}$  with 0km/hour velocity to  $BER=1 \times 10^{-2}$  with 60 km/hour velocity for *rayleigh+AWGN* channel condition. There is increasing of *Call Success Rate* equal to 2 % and decreasing of *Blocked Call Rate* equal to 36%, *Drop Call Rate* equal to 33%, and *Handover Failure Rate* equal to 68% after implementation of frequency hopping which based on location statistic data