ABSTRACT

Frequency hopping (FH) is one of performance improvement method of GSM network which reduce interference and multipath fading. FH switches the carrier frequency of a call occupying a traffic channel periodically. During a call connection, a burst can easily be lost when the mobile station happens to be located in a fading dip for that particular frequency, or if it is subjected to interference. There is a high probability for the next burst to be received if it is sent on a different frequency. Depend on BTS point of view FH consists of 2 methods, *Synthesizer Frequency Hopping* and *Base Band Hopping*.

In *Base Band Hopping*, each transmitter is assigned with a fixed frequency. At transmission, all bursts, irrespective of which connection, are routed to the appropriate transmitter of the proper frequency. *Synthesizer Frequency hopping* means that one transmitter handles all bursts that belong to a specific connection. In contrast to *Base Band Hopping*, the transmitter tunes to the correct frequency at the transmission of each TDMA frame. And also with SFH, frequency allocation for TCH channel will be done by the system.

This final project will cover the SFH implementation as BBH subtitute in Mataram cluster by PT Excelcomindo Pratama tbk. Some Drive Test result parameters before and after the SFH implementation such as *Rxlevel, RxQuality, SQI, and C/I Worst* are measured to be compared and analize. Beside that, MAL (Mobile Allocation List), MAIO (Mobile Allocation index) and HSN (Hopping Sequence Number) strategy will be simulated with Matlab 7.1 to obtain the optimal network performance.

From the analysis result are concluded that after SFH implementation, *Drive Test result parameters* shown the received signal quality and signal strength improved. From the simulation, optimal network performance is obtained from 1x1 MAL with MAIO sector 1 are 0, 6, 12; sector 2 are 2, 8, 14; and sector 3 are 4, 10, 16.

Keyword : *Frequency Hopping, Baseband Hopping, Synthesizer Frequency Hopping*