

## ABSTRACT

*The increasing Market requirements of mobile communications service nowadays had forced the system to improve it's capacity and the efficiency of frequency spectrum. Code Division Multiple Access (CDMA) is one of those technologies. Signal to Interference plus Noise ratio (SNIR) can be considered as the main problem that limited the capacity of an CDMA system. Therefore, it need a kind of technique to reduces it's interference between users. One of the technique that can be applied is a multiple access technique that divide the space between user, or usually known as the Space Division Multiple Access (SDMA).*

*One method of SDMA that can be used is to divide the space using an adaptive antenna. In this project, we will conduct a research about SDMA using eight, twelve and sixteen linear element antennas which will be installed in BTS. The research will be done in many forms of sectorization, Comparison study includes the parameters of SNIR,  $f$  factor (ratio of outcell to incell interference) and  $E_b$  to  $I_0 + N_0$ .*

*The simulation result shows that the C type of sectorization ( the first sectors had the  $0^\circ$  &  $180^\circ$  direction as the center of it's  $60^\circ$  sub sectors) gave the best SINR values than the use of 8 & 12 element antenna. While for the  $f$  factor the B case (the first sectors had the  $90^\circ$  &  $270^\circ$  direction as the center of it's  $60^\circ$  sub sectors) gave the best values than the other case. In SDMA with the optimum type of sectorization should use 12 antennas because of the SINR and the device dimension.*