ABSTRACT

In this final task performance observation of variable-step power control (VSPC) which is combined with antenna diversity in CDMA systems. Power control in CDMA systems is a very important aspect considering that CDMA is the system which is limited by interference from the user (interference-limited). This is because each user occupies the same frequency so that the distinction between the user only uses the user code which is called PN *codes*, however the user codes are frequently experience cross correlation. Based on previous observations of a deep fade effect also affects the performance of power control in CDMA systems. Variable-step power control (VSPC) is a power control algorithm that uses more than one bit PCC which is designed to overcome the delay in updating the desired power level (SIR) faster. And diversity technique is designed to overcome the multipath fading that can cause deep fade effects. Diversity technique that used in this final task is antenna diversity. Antenna diversity takes advantage of the use of antennas which are arranged according to distances between the antenna elements.

The evaluation is done by some simulation scenarios, the simulation for the performance of variable-step power control (VSPC) without diversity, antenna diversity performance without power control and the last VSPC performance combined with antenna diversity. Parameters that become the benchmark measurement of SIR (Signal-to-interference), and BER (Bit-error-rate), and the factors which are taken into consideration are fading rate user, the level of the step-size power control and the number of active users.

From the evaluation of simulation shows that the performance of MRC algorithm provides the best performance of antenna diversity combining algorithm. The performance of variable-step power control (VSPC) is best seen in the use of the step-size level 1 dB. The influence of the number of active users changes the interference experienced by users who observed that would change the average SIR value - the average user is observed. The last, fading high user rates can be overcome with a combination of antenna diversity and VSPC.

Keywords: Power Control, a deep fade, diversity antenna, SC, EGC, MRC, VSPC