ABSTRACT

The next goal for the cellular industry was to introduce connectivity to packet data networks via cellular systems while increasing voice capacity. Futhermore, the user's ability tu communicate over a packet-switch data bearer service while simultaneously engaged in a voice call was deemed to be very important especially for mobile ones. The 1x EV-DV, an enhancement to CDMA2000's Air interface proposed by 3GPP2 as a solution to meet the needs.

This final project research describes several system level issues in designing an air interface 1x EV-DV to support packet data services in the reverse link, such as physical layer enhancements (Walsh code, block interleaver), the design of data rate set, and frame sizes. It will also presents systems level performance data under a few speeds of mobile station mobility scenarios.

Simulation present some numerical result for the design for CDMA2000 1x EV-DV reverse link. The enhancements impact the system performance, i.e. BER, FER and hroughput. The algorithm block interleaver method will reduced 1 dB of BER's values than matrix block interleaver. The longer spreader's Walsh code can achieve the lower values of BER. 2x2 matrix can achieved BER 1.10^{-3} at Eb/No 11 dB, 4x4 matrix at Eb/No 9 dB and 16x16 matrix at Eb/No 5.2 dB. The higher data rate will reduced the values of BER. *Data rate* 1,036.8 kbps increased 2 dB of BER's values than 28.8 kbps. The shorter frame sizes will reduced the values of FER. For Eb/No 10 dB, frame 20 ms can achieved FER = 6.10^{-2}, frame 10 ms can achieved FER = 3.10^{-2} and frame 5 ms can achieved FER = $1,4.10^{-2}$. The performance of throughput system will reduced for the higher user's speeds. For 60 mph can achieved 99% throughput system at Eb/No 6 dB, 24 mph can achieved 99% at Eb/No 4 dB and 24 mph can achieved the same throughput at Eb/No 3 dB.