

ABSTRACT

One of purposes on existing of 4th Generation is better communications requirement especially for bandwidth and high-speed data communication. MC-CDMA then proposed as the solution on Personal Indoor Mobile Radio Communications (PIMRC) conference in 1993^[15].

This research combines the MU-MC-CDMA system with MIMO-SM at uplink and use the multiuser ZF-UOSIC detection technique at receiver. Parameters that will be checked are influence of multiuser variation, user movement, and also processing gain.

The research results MIMO/MU-MC/CDMA system performance using obtained that using multiuser ZF-UOSIC detection is better, even better than Novel LS ZF-UOSIC. The higher processing gain hence performances will become better. On simulation with vary of users' active and user static condition some performance repairs tend to stabilize on $E_b/N_o = \pm 2\text{dB}$. As the trade-off arises the performance degradation as the effects of it nevertheless there are remains some repairs. Repair range to obtain $BER=10^{-3}$ is as follows; on user movement 3km/hour the E_b/N_o repairs for all number of users' active in range 0,8–2,9dB for TYPE-1, for TYPE-2 the repairs range $E_b/N_o=1,8-3,7\text{dB}$. On user movement 30km/hour repairs range $E_b/N_o=3-5,2\text{dB}$ for TYPE-1, TYPE-2 there are 6–8,2dB. On user movement 120km/hour there're no such repairs occur significantly on higher users' active. For TYPE-1 E_b/N_o repairs range only 1,9–2dB, while for TYPE-2 repairs range $E_b/N_o=0,5-9\text{dB}$.

Keyword: MC-CDMA, MIMO, ZF-UOSIC, multiuser, user movement, processing gain.