

ABSTRACT

Capacity of CDMA system is depend on its interference level. Other hand increasing of user growth will cause interference level reach its toleration limits. This situation will cause blocking on CDMA system. Blocking in CDMA system is define as rejected call because interference level has reach predetermine level under AWGN noise density.

In order to compensate increasing of capacity, it is needed to add new cells in hotspot area. One of method of placing new cells is making overlay cell on existing cells. So that in a single macro cell there are several micro cell. Overlay cell structure on CDMA system can use same frequency in order to increase spectrum utility.

Using overlay cell structure with same frequency makes new problem. It can increase cross-tier-interference so that capacity estimation method of non-overlay system can not be used because cross-tier-interference is spontaneously give big impact on system total capacity. This final project will give an overview of capacity changing pattern in its relation to changing of user density pattern on CDMA system with *multi-tier single carrier* cell structure. Simulation result show that for uniform MS density, multi-tier single carrier cell structure's capacity will increase 19% or 34 MS than single tier (non overlay) cell structure. Otherwise for uniform MS density multi-tier single carrier cell structure's capacity will decrease 13,7% to 28% than single tier (non overlay) cell structure.

Possibility of applying this cell structure scheme on CDMA system is also affected by type of Call Admission Control algorithm and Power Control scheme which are used in the system. This Final Project use Delta CAC as Call Admission Control algorithm. Delta CAC algorithm is not suitable for multi-tier single carrier cell structure and it is need a centralized power control algorithm to overcome cross tier interference