

## ABSTRACT

Keeping an eye on the future upcoming demands for mobile applications, 3GPP has the target to enhance the downlink packet data rate in many folds. As a result, WCDMA specifications have been evolved with the addition of a new feature called HSDPA (High Speed Downlink Packet Access) in Release 5. The goal of HSDPA has been to increase the system capacity by increasing the data rate and reduce the round trip delay. The increase of system capacity has been achieved by dynamic sharing of code resource and certain amount of power.

However, in a real deployment scenario, it may happen that some of the cells are implemented with HSDPA and some are not yet; what will happen to the capacity of those cells without HSDPA? When HSDPA is implemented in a cell, the base station uses more power, imparting more interference to the neighbouring cells, thus affecting their dedicated channel capacity. In addition to the higher power, if the availability of data in the HSDPA channel varies, then the interference to the neighbouring cell might be larger and fluctuating, in turn, the dedicated channel capacity of the neighbouring cells might be affected.

It has been found that the decrease in the dedicated channel capacity is more if the HSDPA data traffic is larger. The fluctuating data in HSDPA channel has not degraded the capacity further; it is only the higher power, which has affected the dedicated channel capacity. However, in all these cases, variation can be considered as negligible.

We can use various formulas such as fading rate, power control, interference system and SIR, we can calculate some fluctuations in system capacity and quality, then we can compare it with reference system. From calculation method, it is gained that HSDPA power for system model is 12,56 Watt and with using interference formula, the SIR calculation result is -9,158 dB.