

Abstract

The problem which is often met at network using CDMA multiple accesses, in this case WCDMA are *cell breathing* and *pilot pollution*. Pilot signal is signal which is used as reference by mobile station to identify and distinguish identity from each base station. The pilot pollution is caused by the existence of 3 or more pilot signal with power that almost same at one particular area, the interference (I_o) of downlink will increase when the mobile station catch that's pilot signals at the same time, so that cause level power of E_c/I_o which is measured by user from serving base station become decrease. While the cell breathing is the phenomenon of expanded and became small cell coverage accordance with the traffic that happen in that cell, when the traffic in cell is high so E_b/N_o that is measured by user will decrease under of threshold, and that user become out of coverage. That's two matters will influence the percentage of soft handover area.

In this final task, pilot pollution and cell breathing are simulated, and also analysis that's influence to the happening of drop call at WCDMA. And then to find the percentage of soft handover area that is optimal for the pilot pollution and cell breathing to maintain WCDMA network performance.

At the percentage of soft handover area 10%, the numbers of drop call user because of pilot pollution are 9 users but number of handover user at cell breathing only 17 users. While at percentage of soft handover area 30%, number of handover user until 42 users but numbers of drop call user because of pilot pollution are 24 users. So the most optimal wide of soft handover area to maintain WCDMA network performance is 20% from all wide of cell.

Key word: *cell breathing*, *pilot pollution*, WCDMA