TD-WCDMA無線電系統在市區街道微細胞系統之容量分析 = Performance analysis of TD-WCDMA wireless system in city street ...

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摘 要

本文係探討一TD-WCDMA系統中，部署於市區直線性十字型及長方型街道中之微細胞基地台以及行動台多重接取干擾與干擾時間比例，且加入了護衛時間來避免行動台發生必須同時發射及接收的情況，其中一TD-WCDMA時框包含發射及接收十五個時槽。由於行動台為平均分佈於微細胞基地台涵蓋範圍內，在下行鏈路中，行動台的位置不同，所受到的干擾程度也會有所不同，我們取兩點位於細胞邊緣，所受到干擾較為嚴重處來進行分析其受干擾情形，再以通訊中斷率為標準，分析其用戶容量。無線通道只考慮了路徑損失和遮蔽效應，而多重路徑效應則假設可由其它訊號處理方法加以補償。 關於系統效能方面，我們以2%通訊中斷率來評估系統容量。當被干擾行動台位於兩個電波涵蓋半徑為200公尺十字型微區中間，在路徑損失轉折點距離小於微細胞電波涵蓋半徑或路徑損失轉折點距離大於微細胞電波涵蓋半徑時，系統分別可容納35、31個用戶; 當被干擾行動台位於兩個電波涵蓋半徑為200公尺長方型微區中間，在路徑損失轉折點距離小於微細胞電波涵蓋半徑或路徑損失轉折點距離大於微細胞電波涵蓋半徑時，系統分別可容納32、29個用戶。由前述結果發現當十字型通道所受鄰近細胞干擾最小及路徑損失轉折點距離小於微細胞電波涵蓋半徑時系統容量最大。

關鍵詞 : 干擾時間比例;通訊中斷率;通訊容量;細胞半徑;通訊效能

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