

Assessment of Spectral Efficiency about 900 MHz using GSM and CDMA Technologies for Mobile Cognitive Radio

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Abstract—Basis of cognitive radio is to exploit unused frequency channels in licensed bands. Recently standardized IEEE 802.22 set of cognitive radio protocols envisages fixed and nomadic receivers at below 800 MHz bands. Existing mobile communication system uses CDMA in 800 MHz band and GSM in 900 MHz band. Research works has established that there are some vacant channels in these mobile communications bands which are permanently available and can be deployed as cognitive control channel (CCC) and cognitive pilot channel (CPC). Dynamically available vacant channels in these frequency bands can be deployed for cognitive traffic. In the present study, conventional Radio frequency scanners available for different bands and dedicated engineering handsets are used for measurement of data speed in these bands. Drive tests were carried out in dense city of Kolkata across the length and breadth and spectral efficiency value was measured from data speed. The results can be utilized to take decision for appropriate radio access technologies (RAT) to deploy for mobile cognitive radio in uplink and downlink directions in these frequency bands.

Keyword—Cognitive Radio, cognitive control channel , cognitive pilot channel, GSM, CDMA



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