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35. Efficient Allocation of Walsh Codes in a CDMA Cellular System

Abstract

A method for allocating Walsh codes by group in a CDMA (Code Division Multiple Access) cellular system is disclosed. The proposed system provides a method for rouping, allocating, removing and detecting of the minimum traffic group to minimize the time for allocating a call or transmitted data to an idle Walsh code, thereby, improving the performance of the system and reducing the time required to set up the call. The new concept of CGIWC has been presented to solve the idle Walsh code allocation or data allocation, and the respective removal of the Walsh Codes. Each CGIWC has an administrative control of its group, and all other CGIWCs maintaining a log; by keeping the number of calls active or being removed. In allocating an Idle Wash Code, the BCP (Base Station Call Control Processor) of the CDMA base station checks the numbers of the allocated Walsh codes per group. Similarly, when the removal of the allocated Walsh code is requested, the BCP of the CDMA base station searches the Walsh code group to locate the Walsh code to be. Moreover, a comparison with the previous work has been shown for the support of our related work. At the end, the future direction in which the related work can be employed, are highlighted. Simulation results show that under various situations of simultaneous calls arrival, the proposed method decreases the time complexity of finding the IDLE Walsh Code and their respective removal and improves the time required to set up the caller's call as compared with all aforementioned schemes. The efficient utilization of CGIWCs is also presented using MATLAB.