



TECHNOLOGY

Power Control Based Admission Methods for Maximum Throughput in DS-CDMA Networks with Multi-Media Traffic

OVERVIEW

There is an increasing use of multi-media transmissions over cellular CDMA networks. However, a CDMA cellular network is by its very nature interference limited. The layering of each signal across the available bandwidth increases the interference and affects the overall bandwidth utilization. Attempts have been made in the past to limit the amount of interference by limiting the number of network users. However, this affected the throughput of the network and also adversely affected new admissions to the network.

A system has been developed for jointly controlling the data rates and transmit power of users so as to maximize throughput in cellular Direct Sequence Code Division Multiple Access (DS-CDMA) networks. The system is applied to both multi-code (MC-CDMA) and variable gain (VG-CDMA) systems in order to maximize throughput in both systems.

The systems includes a method for maximizing the data throughput over a multi-code DS-CDMA network by controlling the number of codes assigned to each user while controlling the power budget of each user so that each user's bit energy to noise ratio is met along with the quality of service and frame error rate requirements. Another method is also provided for maximizing the throughput over a variable gain DS-CDMA network in which each user uses only one code and changes the data rate and power to meet quality of service requirements. In both methods, new users will be admitted so long as the power budget and bit energy to noise ratio requirements of each user is maintained. Both systems become closed to new admissions if the addition of a new user would cause any active user to not meet its required performance.

For additional information, please contact the Office of Technology Commercialization, University of Maryland, College Park, MD 20742. tel: (301) 405-3947 e-mail: otc@umd.edu

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Issued

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CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- [Executive Summary](#)
- [US Patent 6,947,407](#)

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