



## TECHNOLOGY

# Power Control for Active Link Quality Protection in CDMA Networks

## OVERVIEW

Broadband CDMA systems will provide a wide range of multi-media services including voice, data and video. With multi-media traffic, users present the network with a range of bandwidth and quality of services (QoS) requirements.

The performance of a CDMA system is interference limited. Interference can cause disruption in the service of dedicated bandwidth or circuit data users who have been admitted into the system and guaranteed frame error rate and throughput targets. In order to provide the QoS guaranteed to data users, the interference in the system must be tightly controlled. Multi-access interference can be regulated by controlling the transmit powers of the users. Power control techniques that are designed only to combat fading suffer the problem that an active new user can cause the signal to noise ratios of operational users to drop below their required threshold. Therefore, power control techniques must be designed to adjust the power when new users are admitted to the system to maintain their guaranteed QoS and for active link quality protection.

A system and method has been developed for dynamically limiting the power of all users of a CDMA digital data link to maximize throughput and reduce interference among users of the link. In the operation of the data link, the maximum power available from each user of the link is determined along with the minimum power needed from each user to meet its link service requirement, or QoS and frame error rate requirements. The maximum to minimum power ratio is derived for each user and the lowest power ratio, or the power ratio closest to unity, is selected and used to scale upward the minimum power levels of all users of the data link. The resulting power level establishes the interference margin or slack available for all users of the data link and the interference slack available for new users to be admitted to the data link.

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## Additional Information

## INSTITUTION

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## **PATENT STATUS**

Issued

## **LICENSE STATUS**

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## **CATEGORIES**

- Information Technology

## **EXTERNAL RESOURCES**

- [US Patent 6,879,572](#)

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