Optimization of Power Control during Soft Handover in WCDMA Cellular Networks

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In this paper, a new power control scheme is proposed for optimizing the power division between the BSs in the active set during soft handover. In stead of splitting the power equally between the BSs in the active set, it controls the power division according to the propagation attenuation of each radio channel.

The optimized power control minimizes the interference and maintains getting benefits from the macrodiversity at the same time. Compared with the balanced power control scheme adopted by 3GPP, the overall interference for a user in soft handover status is reduced by applying the optimized power control. Compared with the SSDT, the optimized power control is more robust to the fluctuating attenuation of the radio environment because it keeps macrodiversity. The signals from all the BSs in the active set are combined in the mobile terminal. If one of the channels suddenly experiences bad attenuation, the overall quality of service will not drop as badly as could happen with SSDT.

Compared with the balanced power control scheme adopted by 3GPP, the optimized power control increases the soft handover gain. The new approach is especially suitable for the WCDMA systems with higher soft handover overhead and operating in a radio environment with worse propagation attenuation.

References


