Transmission Scheme for D2D Multicast Communication in LTE-Advanced Networks

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***Abstract*—We consider D2D multicast communication which reuses cellular uplink frequency resources in LTE-Advanced networks. In this case, the cellular uplink signal will interfere to the D2D link communication. The data transmission rate of D2D multicast communication is determined by the user having the worst signal-to-interference plus noise (SINR) condition. Conventional schemes assume that the D2D transmitter employs SC-FDMA transmission scheme because it is already used for cellular uplink transmission in LTE-Advanced system. However, if SC-FDMA is employed in D2D transmitter, it is very difficult to reduce the interference from the cellular user in D2D receiver and D2D multicast transmission is allowed only when the interference from the cellular user is very small in all users within the D2D multicast group. In this paper, we propose to employ MC-CDMA transmission scheme in D2D multicast transmitter. The interference signal from the cellular user can be eliminated by applying the interference cancellation schemes in the D2D multicast receivers and D2D communication becomes possible even in the high interference cases. Through simulation, we show that the proposed scheme has better SINR performance than the conventional scheme.**

***Index Terms*: Device-to-device communications (D2D), multicasting, LTE-Advanced, SC-FDMA, MC-CDMA.**

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