

# A flexible spread-spectrum multi-carrier multiple-access system for multi-media applications

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**Abstract:** This paper presents a novel multiple access scheme designed for mobile multi-media applications. The scheme is referred to as spread-spectrum multi-carrier multiple-access (SS-MC-MA) and exploits the advantages given by the combination of the spread-spectrum technique with multi-carrier modulation, known from multi-carrier code division multiple access (MC-CDMA) schemes. In contrast to MC-CDMA, the SS-MC-MA separates the users' signals according to an FDMA scheme on the sub-carrier level. Thus, the novel scheme avoids multiple access interference (MAI) within a cell. SS-MC-MA can use the same radio interface for the up- and the down-link. Its bandwidth efficiency is comparable to the high bandwidth efficiency achievable with MC-CDMA in the down-link. By providing a high degree of flexibility, this system can be a good candidate for the future Universal Mobile Telecommunications Systems (UMTS).

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