



COLLISION-FREE MULTIPLE ACCESS RESERVATION SCHEME FOR MULTI-TONE MODULATION LINKS

Abstract:

5 A method is provided for multiple remote units (RU)s to efficiently
utilize resources on a shared OFDM high speed data channel without
collisions. A collision occurs when two or more RUs transmit on the same
frequency at the same time. The method defines two distinct states for
accessing the channel. These are the Arbitration state and the Data Transfer
10 state. A base station transmits a flag on the downlink to notify the RUs of
which state is in effect. RUs having a data message notify the base station by
transmitting a frequency tone, which acts as a request to transmit data,
during the arbitration state. The tone frequencies are frequency spaced to be
mutually orthogonal, so that the base station can receive all the uplink
15 requests simultaneously. Upon receiving the uplink request signals, the base
station establishes the data transfer state and orders the uplink data
messages from the remote units is a non-interfering sequence. A system for
preventing uplink data message collisions in an OFDM communications
system is also provided.

