Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Basic Frame Structure Definition to Support Partitioning/Grouping for H-FDD Operation**
Date Submitted	**2008-03-10**
Source(s)	Pallav Sudarshan Jeff Zhuang Mark Cudak Motorola, Inc. E-mail: Pallav.Sudarshan@motorola.com Jeff.Zhuang@motorola.com Mark.Cudak@motorola.com <http://standards.ieee.org/faqs/affiliationFAQ.html>
Re:	IEEE 802.16 Working Group Letter Ballot Recirc #26b
Abstract	Clarifications and signaling mechanisms are provided for efficient operation of H-FDD in 802.16e.
Purpose	Accept the proposed specification changes on IEEE P802.16Rev2/D3.
Notice	*This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups*. It represents only the views of the participants listed in the "Source(s)" field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein.
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.
Patent Policy	The contributor is familiar with the IEEE-SA Patent Policy and Procedures: <http://standards.ieee.org/guides/bylaws/sect6-7.html#6> and <http://standards.ieee.org/guides/opman/sect6.html#6.3>. Further information is located at <http://standards.ieee.org/board/pat/pat-material.html> and <http://standards.ieee.org/board/pat>.

Basic Frame Structure Definition to Support Partitioning/Grouping for H-FDD Operation

1. Introduction

The default UL transmission is “time-first”, as opposed to default “frequency-first” allocation in DL. The UL transmission for a user starts after the end of previous allocation. The temporal duration of the UL transmission for a user usually spans the entire zone. This is the so-called “snake-like” allocation, which means essentially that in order to enable H-FDD SS with both UL and DL traffic in the same frame, uplink subframe needs to be divided into partitions. Given that a partition can not be defined on a per-SS basis, the more common case is that each partition contains allocation to a group of users.

This contribution proposes texts to clarify that a frame can be partitioned when serving H-FDD users.

2. Proposed Text

I: Add the following text after line 49 pg 678 Section 8.4.4.1

Current text:

8.4.4.1 FDD frame structure

Base stations of OFDMA FDD systems shall operate in full duplex mode. SSs shall be either full duplex (FDD) or half duplex (H-FDD). The FDD frame structure shall support both FDD and H-FDD SS types. The frame structure shall support a coordinated transmission arrangement of two groups of H-FDD users that share the frame at distinct partitions of the frame.

Figure XXX shows an example of an OFDMA frame in H-FDD mode. Each DL frame begins with preamble followed by a DL transmission period for the first group of H-FDD users (i.e., first DL partition “DL1”) and a DL transmission period for the second group of H-FDD users (i.e., second DL partition “DL2”). The UL frame begins with the UL transmission period for second group of users (i.e., first UL partition “UL2”) followed by UL transmission period for first group of users (“UL1”). Each DL partition, DL1 and DL2, has an independent MAP region including FCH, denoted as MAP1 and MAP2, intended for MSs assigned to the corresponding group in any given frame.

In each frame, a TTG gap is defined between the end of DL1 and start of UL1 and a RTG gap is defined between end of UL1 and start of the next frame. For the second group of H-FDD users, a TTG gap is defined between the preamble and start of UL2, and a RTG gap is defined between end of UL2 and start of DL1. All the H-FDD MSs are in the reception mode when the preamble is transmitted in the downlink. No uplink transmission by a H-FDD MS is possible during the time duration of preamble transmission.

In each DL frame, a time gap can be inserted between the DL transmission period for the first group and the DL transmission period for the second group. This time gap is signaled by DCD.

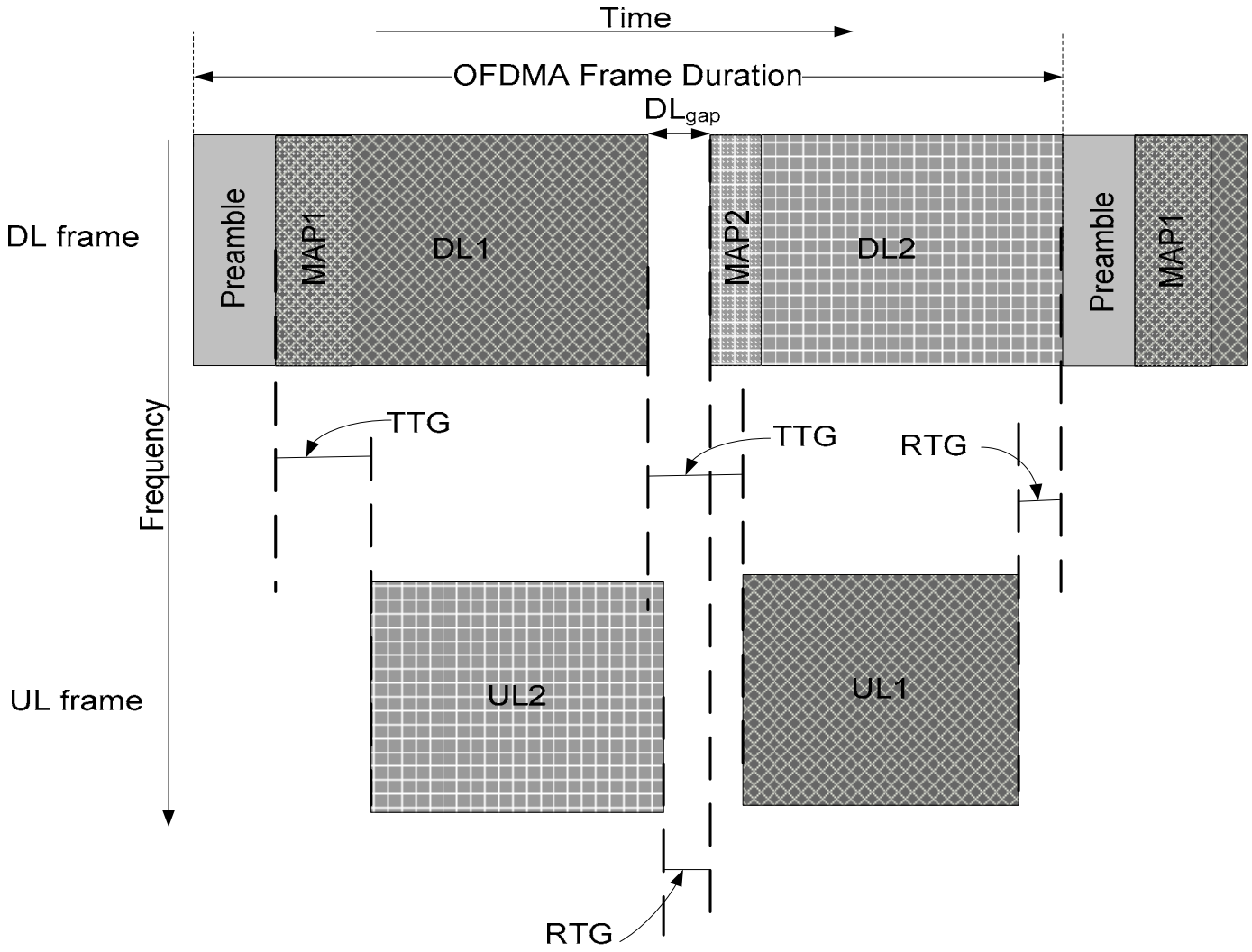

Figure XXX: Example of OFDMA frame in FDD mode