Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Efficient Signaling to Support Partitioning/Grouping for H-FDD Operation**
Date Submitted	**2008-01-14**
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 #26a
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/D2.
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Efficient Signaling 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 with an associated efficient signaling mechanism.

2. Proposed Text

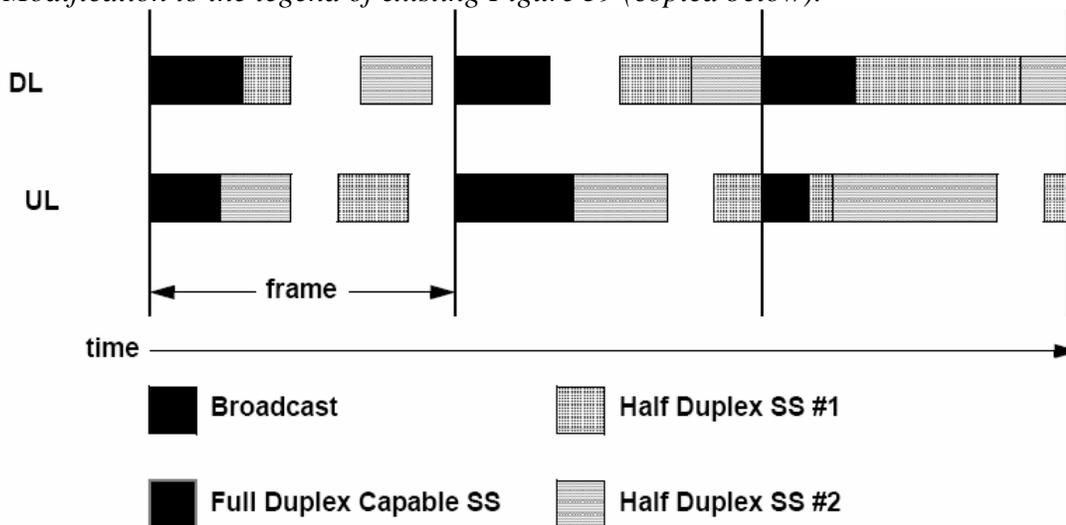*I: Modification to the legend of existing Figure 59 (copied below):*

Figure 59—Example of burst FDD bandwidth allocation

Fig 59 should denote the different temporal regions more generically as "Half Duplex Partition #1" and "Half Duplex Partition #2", instead of "Half Duplex SS #1" and "Half Duplex SS #2".

II. Add the following paragraph after Fig 59 pg 293:

"To efficiently serve H-FDD SS, the downlink and uplink portion of a frame can be divided into two DL and UL partitions. A DL partition such as the second one, associated with a non-overlapping UL partition (i.e., first one), along with a properly defined gap in between designated for RTG or TTG, can be used to serve a group of H-FDD users. For example, the first (or second) DL partition and the corresponding second (or first) UL partition can be used to serve a first (or second) group of SSs. Each DL partition of the H-FDD frame can have an independent MAP region including FCH intended for only the SSs assigned to the corresponding group in any given frame."

III: Insert new subclause 8.4.5.3.28 at line 44 Pg. 753 (i.e., after 8.4.5.3.27):

8.4.5.3.28: H-FDD Frame Configuration IE

For H-FDD operation, the DL Frame Configuration IE shall be used by the BS to signal the partitioning of DL subframes. The end of the DL portion of Half-Duplex Partition #1 and start of the DL portion of   Half-Duplex Partition #2 are specified in the H-FDD Frame Configuration IE as follows.

Syntax	Size	Notes
DL_Frame_Configuration_IE() {	-	-
Extended DIUC	4 bits	DL_Frame_Configuration_IE() = 0x0D
Symbol offset1	6 bits	Symbol offset of the end of first partition from the preamble
Symbol offset2	2 bits	Symbol offset of the start of second partition from the end of first group
}	-	-

The corresponding UL partitioning is implicitly defined according to the DL partitioning, after observing the specified RTG and TTG.   Particularly, the start of the UL portion of Half-Duplex Partition #1 is defined as "Symbol offset 1 + RTG", and the end of the UL portion of Half-Duplex Partition #2 is defined as "Symbol offset1 + Symbol offset 2 –TTG".

IV: *Change Table 323 Pg. 701 as indicated:*

Extended DIUC (Hexadecimal)	Usage
0D–0E	*Reserved*
0D	DL Frame Configuration IE
0E	*Reserved*