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| Project | **IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16> |
| Title | **Efficient Signaling to Support Partitioning/Grouping for H-FDD Operation** |
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| Source(s) | Pallav Sudarshan<br>Jeff Zhuang<br>Mark Cudak<br>Motorola, Inc.<br>E-mail:<br>Pallav.Sudarshan@motorola.com<br>Jeff.Zhuang@motorola.com<br>Mark.Cudak@motorola.com<br><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):*

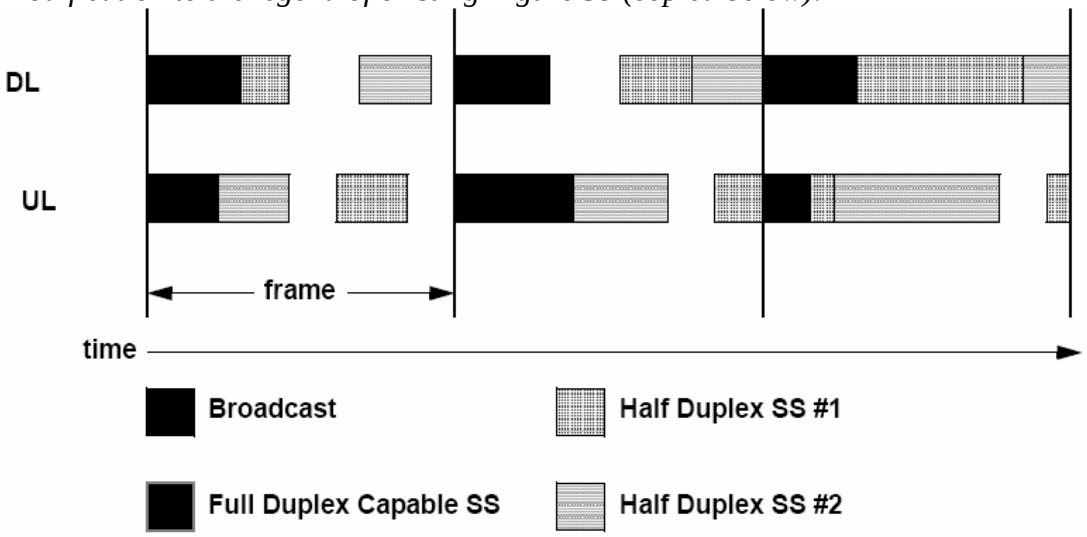


**Figure 59—Example of burst FDD bandwidth allocation**

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* |