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|---|---|
| Re: | IEEE 802.16 Working Group Letter Ballot Recirc #26a |
| Abstract | A mechanism is defined to enable switching of MSs between the two groups in H-FDD operation. |
| Purpose | Accept the proposed specification changes on IEEE P802.16Rev2/D2. |
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# Efficient Signaling to Support Grouping Switching for H-FDD Operation

## 1. Introduction

In H-FDD operation, a group of user terminals transmit in the temporal region where another group of user terminals receive. This divides the user terminals into two groups, and divides any particular frame in two temporal regions or partitions. The assignment of user terminals to the groups can be done dynamically or statically, depending on BS implementation and deployment preferences. For load-balancing or to enable advanced grouping of users, the BS may require switching a user terminal from one group to the other. A low-overhead mechanism is needed to enable fast switching of a user terminal from one group to the other. This contribution provides details of the signaling mechanism.

## 2. Proposed Solution

In H-FDD operation, for a HARQ-enabled MS, the BS shall signal the group association to the MS using a new "Group Indicator" field in DL HARQ Chase Subburst IE, using one of the reserved bits. In the case of a group switch, BS may request an acknowledgement by allocating a one-time additional CQI channel to the MS for transmitting a special CQICH code. After the transmission of the special acknowledgement, the MS will switch to the other group. If BS chooses not to request any acknowledgement, no CQI feedback channel shall be assigned. If the BS does not detect the MS acknowledgement CQI, it could re-transmit the group switch message. In case a HARQ-enabled MS does not have any DL allocation, the BS may issue a DL HARQ Chase Subburst IE with the Group Indicator and "null" subchannel allocation (i.e., zero subchannel) for that MS.

For non-HARQ-enabled MS, the BS shall signal the group association by using the "Symbol Offset" field in DL MAP IE. If the Symbol Offset for the allocation exceeds the size of the partition that the MS currently belongs to, it implies a group change. If the MS also gets a CQICH channel assignment in the same frame of group switch command, which means that the BS requests an explicit acknowledgement, the SS shall transmit a special CQICH code as instructed.

## 3. Proposed Text

***[Change two row of Table 347 on page 732 as indicated in red:]***

**Table 346 -- DL HARQ Chase Subburst IE format**

| Syntax | Size (bits) | Notes |
|---|---|---|
| DL_HARQ_Chase_Sub-Burst_IE() { | | |
| **N sub burst** | 4 | Number of sub-bursts in the 2D rectangular region is this field value plus 1 |
| **N ACK channel** | 8 | 4 Number of HARQ ACK enabled subbursts in the 2D region. |
| For (j = 0; j < Number of sub-bursts; j++) { — — | — | — |
| **RCID_IE()** | *variable* | — |
| **Duration** | 10 | Duration in slots |
| **Sub-Burst DIUC Indicator** | 1 | If Sub-Burst DIUC Indicator is 1, it indicates that |

| | | |
|---|---|---|
| | | DIUC is explicitly assigned for this subburst. Otherwise, the this subburst will use the same DIUC as the previous subburst If j is 0 then this indicator shall be 1. *Reserved* 1 Shall be set to zero. |
| ~~*Reserved*~~ | ~~1~~ | |
| **Group Indicator** | 1 | Indicates the group assignment of the MS<br>0b0: Group #1<br>0b1: Group #2 |
| If( Sub-Burst DIUC Indicator == 1){ | ~~2~~1 | |

***[Add the following paragraph after line 52 on page 733]***

In H-FDD operation, the BS shall include the Group Indicator field to signal the group index that the MS should be associated with. If the BS requests explicit acknowledgment, it shall assign a CQI channel in the DL HARQ Chase Subburst IE that contains a group switch instruction, by setting the LSB #0 of the Dedicated DL Control Indicator to 1. MS shall acknowledge the group change with a CQICH code = 0b1100 in the assigned CQICH channel indexed by the Allocation Index. When the MS is instructed to switch from one group to the other, the periodic CQI allocations for MS shall be deallocated after the MS sends the acknowledgement CQI code.

***[Change Table 378 on page 771 as indicated:]***

**Table 378—Effective CINR feedback encoding**

| Label | Encoding | MCS |
|---|---|---|
| ~~12 - 15~~ | ~~0b1100-0b1111~~ | ~~*Reserved*~~ |
| 12 | 0b1100 | |
| 13 -15 | 0b1101-0b1111 | *Reserved* |