Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>
Title	**Switching Gaps in H-FDD Operation**
Date Submitted	**2008-03-10**
Source(s)	Pallav Sudarshan, Pallav.Sudarshan@motorola.com Jeff Zhuang, Jeff.Zhuang@motorola.com Mark Cudak, Mark.Cudak@motorola.com Motorola, Inc. <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>.

Switching Gaps in H-FDD Operation

1. Introduction

In a H-FDD system, proper switching gaps need to be defined between the reception and transmission period of a MS. Additional constraint arise from the duration of the frame and the location of the gap in the DL and UL frames in H-FDD. Contribution IEEE S802.16maint-08/122 describes some of these constraints.

In this contribution, we propose a mechanism to ensure proper spectral utilization while observing these constraints.

2. Proposed Text

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

The time gap between the DL transmission period for the first group and the DL transmission period for the second group is:

$DL_{gap} = T_r + DL_{gapSyms} T_s$

where $DL_{gapSyms}$ is an integer number of OFDMA symbols and T_r is the remaining time after the maximum number of integer symbols are accommodated in a OFDMA frame, i.e.,

$$T_r = T_f - \left\lfloor \frac{T_f}{T_s} \right\rfloor T_s$$

II: Add the row shown in Red to Table 543 pg 1067 Section 11.4.1

Name	Type	Length	Value(variable length)	PHY scope
Available DL Radio Resources	23	1	Indicates the average ratio of non-assigned DL radio resources to the total usable DL radio resources. The average ratio shall be calculated over a time interval defined by the DL_radio_resources_window_size parameter (Table 524). The reported average ratio will serve as a relative load indicator. This value can be biased by the operator provided it reflects a consistent representation of the average loading condition of BSs across the operator network. 0x00 : 0% 0x01 : 1% ... 0x64 : 100% 0x65 - 0xFE : reserved, 0xFF indicates no information available	All
$DL_{gapSyms}$	24	1	Indicates the number of integer OFDMA symbols between the two OFDMA DL subframes in H-FDD	OFDMA