Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Offset indicator for reliable H-ARQ Compact MAP message**
Date Submitted	**2005-01-10**
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Re:	This is a response to a Call for Comments on IEEE P802.16e-D5a
Abstract	Enhancement to the H-ARQ Compact MAP message transfers by defining Start Offset and ACK Offset
Purpose	This document is submitted for review by 802.16e Working Group members.
Notice	
Release	
Patent Policy and Procedures	

Offset indicator for reliable H-ARQ Compact MAP message

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1. Introduction

1.1 Problem Statement

In OFDMA of the current 802.16e standard/D5a, an MSS shall read H-ARQ compact MAP messages transferred to another MSS in order to know the exact location of the burst allocated in DL and ACK channel in ACK Region of UL by calculating the whole sum of burst durations and the sum of bursts number in the previous H-ARQ compact MAP messages. However, when an MSS allocated in the second H-ARQ compact MAP message cannot decode the first H-ARQ compact MAP message, it cannot be informed of the exact location of allocated burst in H-ARQ compact MAP message in DL and ACK channel in ACK Region of UL where each MSS shall respond.

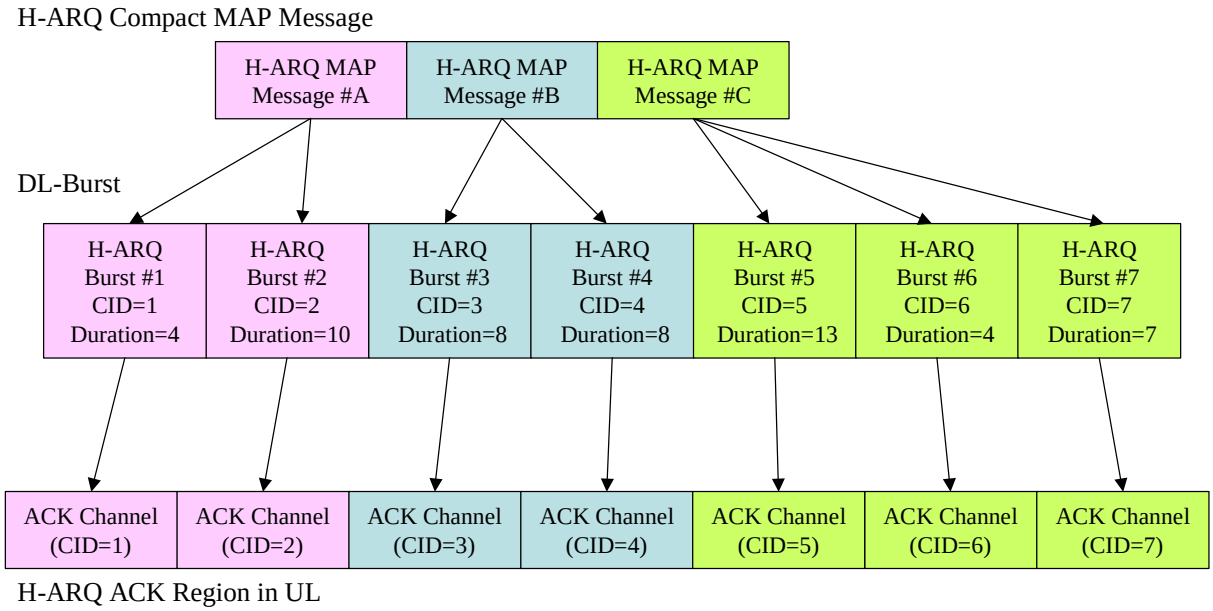

Figure 1. The methods of H-ARQ Burst allocation and ACK channel allocation

For instance, if MSS#3 has a CID of 3 in H-ARQ compact MAP message #B and it fails to decode H-ARQ compact Map message #A indicating burst #1 and #2, MSS#3 does not know the number and duration of each burst in H-ARQ compact MAP message #A so that it cannot calculate sum of burst durations and burst numbers. As a result, the MSS#3 cannot determine the exact location of burst and ACK channel that the MSS #3 shall use. For an another instance, MSS #5 whose CID is supposed to be 5 in H-ARQ compact MAP message #C fails to decode H-ARQ compact Map message #A, it will experience the same problem explained above. Even if MSS #5 succeeds in decoding HARQ compact MAP message #B, it cannot determine the exact location of burst and ACK channel that it shall respond. Consequently, BS shall retransmit H-ARQ bursts to each MSS, which leads to overhead of radio resource.

1.2 Proposed Solution

In this contribution, we propose Start Offset and ACK Offset. The Start Offset indicates the start location of burst in DL, which is mapped to the first burst in each H-ARQ compact MAP message. And ACK Offset indicates the start location of ACK Channel in H-ARQ ACK Region explicitly, which is mapped to the first burst in each H-ARQ compact MAP message. Both the Start Offset and ACK Offset information are included in the Compact DL-MAP IE as shown in Table XXx. The remedy is to use a new Compact DL-MAP Subtypes IE under the existing 'extension' type of Compact DL-MAP IE.

2. Proposed Text Changes

[Change Table 14a in Section 6.3.2.3.43.6.6 as follows:]

Table 14a – DL-MAP Subtypes

DL-MAP Subtype	Description
0	TimeDiversity_MBS
3	H-ARQ Offset
~~1~~4-31	Reserved

[Insert the following section 6.3.2.3.43.6.9 and renumber the next section accordingly:]

6.3.2.3.43.6.9 H-ARQ Compact DL-MAP IE for H-ARQ Offset

The Start Offset and ACK Offset information proposed are included in the Compact DL-MAP IE as shown in Table XXx. The Start Offset indicates the start location of burst in DL, which is mapped to the first burst in each H-ARQ compact MAP message. The ACK Offset indicates the start location of ACK channel in H-ARQ ACK Region explicitly, which is mapped to the first burst in each H-ARQ compact MAP message.

Table XXx – H-ARQ Compact DL-MAP_IE format for H-ARQ Offset

Syntax	Size	Notes
Offset_Compact_DL-MAP_IE() {		
_DL-MAP Type=7	3 bits	
_DL-MAP Subtype	5 bits	Extension Subtype = 0x03
_Length	4 bits	Length of the IE in bytes
_Start Offset	10 bits	Start location of the first burst indicated by the H-ARQ compact MAP message including this Compact DL-MAP IE
_ACK Offset	6 bits	The first ACK channel for H-ARQ compact MAP message including this Compact DL-

		MAP IE.
}		

DL-MAP Type

The DL-MAP Type value specifies the type of the Compact_DL-MAP IE. A value of 7 indicates the extension type.

DL-MAP Subtype

The DL-MAP Subtype value specifies the extended map type as H-ARQ Offset.

Length

This indicates the length of this IE in Bytes.

Start Offset

The Start Offset is 10-bit value that specifies that the first burst indicated by the H-ARQ compact MAP message including this Compact DL-MAP IE.

ACK Offset

The ACK Offset is 6-bit value that specifies that the first ACK channel for H-ARQ compact MAP message including this Compact DL-MAP IE.