Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	H-ARQ MAP Message Format Correction
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Re:	This is a contribution to IEEE 802.16 maintenance.
Abstract	It is not appropriate to allow H-ARQ MAP message sent without a generic MAC header. More importantly, due to new changes accepted by TGe, it is no longer valid to use the first 3 bits of value "0b111" to identify the H-ARQ MAP message. So, it is really needed to design the H-ARQ message as a regular MAC mgmt message, instead of some aliens. Also, our padding byte has value "0xFF", which is also a valid H-ARQ MAP identifier due to its first 3bits of value '0b111". This contribution proposes to format the H-ARQ MAP message as MAC management message.
Purpose	To solve the applicability issue of the PHS to the applications with fast-changing header fields, and to improve the efficiency of PHS rule updates.
Notice	
Release	

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H-ARQ MAP Message Correction

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1. Introduction

It is not appropriate to allow H-ARQ MAP message sent without a generic MAC header. More importantly, due to new changes accepted by TGe, it is no longer valid to use the first 3 bits of value "0b111" to identify the H-ARQ MAP message. So, it is really needed to design the H-ARQ message as a regular MAC mgmt message, instead of some aliens. Also, our padding byte has value "0xFF", which is also a valid H-ARQ MAP identifier due to its first 3bits of value '0b111". This contribution proposes to format the H-ARQ MAP message as MAC management message.

2. References

[16e/D5] IEEE P802.16e/D5-2004

[maint-04/10] IEEE 802.16maint-04/10

3. Proposed Changes

To change the format of the H-ARQ MAP message to a MAC management message, the following changes are needed in 802.16maint-04/10:

a) page 13, line 20, insert the following:

change the entry 19 in Table 14 as follows:

19 HARQ-MAP H-ARQ MAP message Broadcast

b) page 18, line 12, replace the section 6.3.2.3.43.1 by the following:

The H-ARQ MAP message format is presented in Table 86. This message includes Compact DL/ULMAP_IE and defines the access information for the downlink and uplink burst of H-ARQ enabled SS. ~~This message shall be sent without a generic MAC header.~~

BS may broadcast multiple H-ARQ MAP messages using multiple burst after the MAP message. Each HARQ MAP message should have a different modulation and coding rate~~. If the frame contains DCD or UCD message following the MAP message, the H-ARQ MAP should follow DCD or UCD message.~~

The DL-MAP_IEs in the MAP message describe the location and coding and modulation schemes of the bursts. The order of DLMAP_IEs in the MAP message and the bursts for H-ARQ MAP messages is determined by the coding and modulation scheme of the burst. The burst for H-ARQ MAP message with lower rate coding and modulation should be placed before other bursts for H-ARQ MAP message.

~~The presence of the H-ARQ MAP message format is indicated by the contents of the three most significant bits of the first data byte of a burst. These bytes overlay the HT and EC bits of a generic MAC header. When these bits are both set to 1 (an invalid combination for a standard header) and followed by 1 bits of 1, the Compact DL-MAP format is present.~~

Table 86 H-ARQ MAP message format

Syntax	Size	Notes
H-ARQ_MAP message format() {		
Management message type = 19	8 bits	
DL IE count	4 bit	Number of compact DL-MAP IEs
UL IE count	4 bits	Number of compact UL-MAP IEs, if 0, then no H-ARQ UL-MAP appended
For (i=0; i< DL IE count; i++) {		
Compact DL-MAP IE ()	variable	
}		
If (UL IE count >0) {		
For (i=0; i<UL IE count; i++) {		
Compact UL-MAP IE ()	variable	
}		
}		
If (not byte boundary) {		
Padding nibble	*variable*	
}		
}		

~~**H-ARQ MAP Indicator**~~
~~The value of 0b111 means this message is a H-ARQ MAP Message~~

~~**Compact UL-MAP appended**~~
~~A value of 1 indicates a compact UL-MAP is appended to the current compact DL-MAP data structure~~

~~**CRC appended**~~
~~A value of one indicates a CRC-32 value is appended to the end of the H-ARQ MAP data. The CRC is computed across all bytes of the H-ARQ MAP starting with the byte containing the H-ARQ MAP indicator through the last byte of the map as specified by the Map message length field. The CRC calculation is the same as that used for standard MAC messages. A value of zero indicates that no CRC is appended.~~

~~**MAP message length**~~
~~This value specifies the length of the H-ARQ MAP message beginning with the byte containing the H-ARQ MAP indicator and ending with the last byte of the H-ARQ MAP message. The length includes the computed 32-bit CRC value if the CRC appended indicator is on.~~

DL IE count
This field holds the number of IE entries in the following list of DL-MAP IEs.

UL IE count

This field specifies the number of UL IEs in this H-ARQ MAP message. If it is 0, then it indicates no H-ARQ UL MAP IEs are appended.