Project	**IEEE 802.16 Broadband Wireless Access Working Group** <http://ieee802.org/16>	
Title	**MBS_DATA_Time_Diversity_IE Corrections**	
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Re:	802.16 Working Group Letter Ballot #26a	
Abstract	This document proposes fixes in MBS_DATA_Time_Diversity_IE.	
Purpose	To be discussed and adopted by 802.16 Rev2.	
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MBS_DATA_Time_Diversity_IE Corrections

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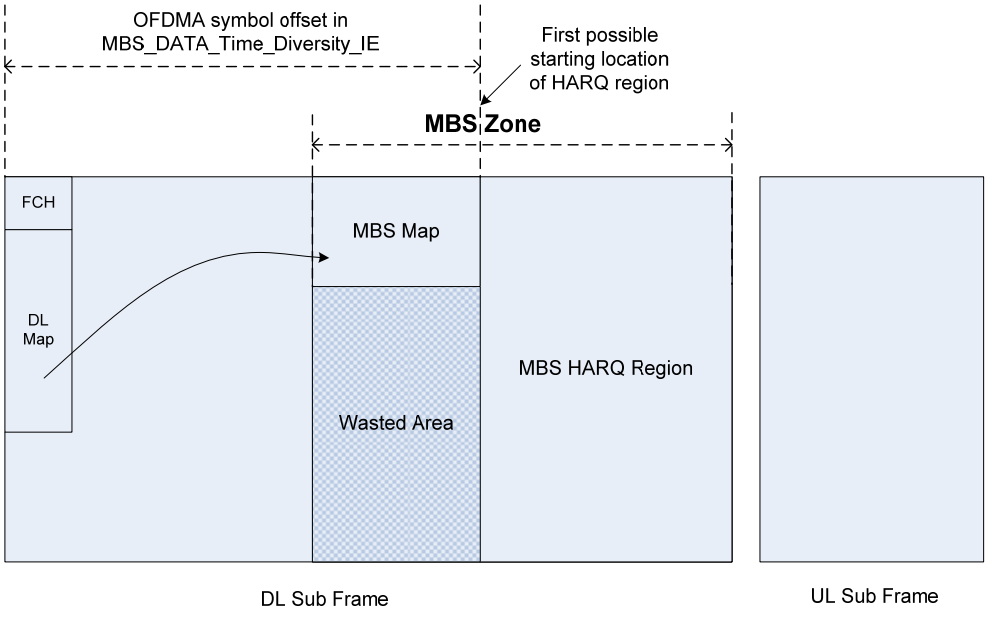
Problem statement

There are two problems with the MBS_DATA_Time_Diversity_IE:

1) in Rev2/D2, page 248, Table 157, the field "# of MBS_DATA_Time_Diversity IEs with the same MBS Burst Frame Offset" is incorrect, as it is not the number of the diversity IE itself, it is actually the number of MBS HARQ data sub-bursts;

2) The field "OFDMA symbol offset" in MBS_DATA_Time_Diversity IE indicates the starting offset of the MBS HARQ region, and the MBS HARQ region defined by the MBS_DATA_Time_Diversity_IE spans over the entire set of subchannels. As a result, the OFDMA symbol offset of the starting location of the HARQ region need to point to a symbol after the last symbol occupying the MBS map. Using this method, the area under the MBS map remains unused. Note that the MBS MAP allocation is specified as a block allocation by the MBS MAP IE in the DL MAP. Depending on the shape of MBS MAP allocation, such a waste could be serious as shown in the figure below.

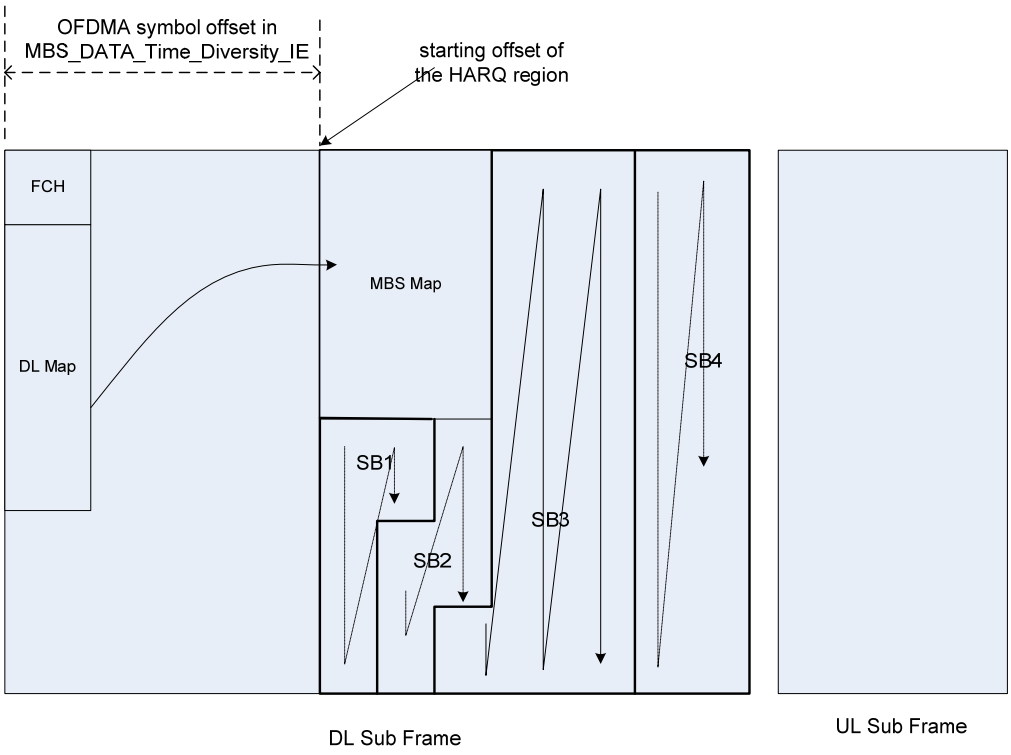


Proposed Corrections

1) in Rev2/D2, page 248, Table 157, change the field name "# of MBS_DATA_Time_Diversity IEs with the same MBS Burst Frame Offset" to "# of MBS HARQ Data sub-bursts";

2) change the interpretation of MBS HARQ region defined by the parameter "OFDMA symbol

offset" so that the full MBS region can be utilized: first to allow the HARQ region to start at the same time as the MBS MAP in the same MBS zone if there are subchannels remains unoccupied by the MBS MAP; then allow MBS HARQ data sub-bursts in this region start right after the MBS MAP, i.e., at the subchannel logically numbered after the largest subchannel occupied by the MBS map and will continue in that manner until all symbol groups in the MBS map are full, as shown in the figure below.



Suggested Changes in Rev2/D1

In Rev2/D2, replace the contents from page 248 line 6 to page 249 line 11 by the following, where the new texts are marked by blue and underlined; the deleted texts are red with strikethrough:

Table 182 —MBS_DATA_Time_Diversity_IE format

Syntax	Size	Notes
MBS_DATA_Time_Diversity_IE() {	—	—
MBS_MAP Type = 1	2 bits	—
MBS Burst Frame Offset	2 bits	This indicates the burst located by this IE will be shown after MBS Burst Frame offset + 2 frames
OFDMA symbol offset	8bits	This indicates starting position of the region of MBS Bursts with respect to start of the next (MBS Burst Frame offset + 2)-th frame.
# of HARQ Data Sub-bursts ~~MBS_DATA_Time_Diversity_IEs with the same~~	4 bits	n = # HARQ Data Sub-bursts ~~MBS_DATA_Time_Diversity_IEs with the~~

~~MBS Burst Frame Offset~~		~~same MBS Burst Frame Offset~~
For(i=0; i<n; i++){		
Multicast CID	12 bits	12 LSBs of CID for multicast.
N_EP code	4 bits	—
N_SCH code	4 bits	—
AI_SN	1 bit	—
SPID	2 bits	—
ACID	4 bits	—
Next MBS MAP change indication	1 bit	This indicates whether the size of MBS MAP message of next MBS frame for these multicast CIDs included this IE will be different from the size of this MBS MAP message.
Next MBS frame offset	8 bits	—
Next MBS OFDMA Symbol offset	8 bits	—
If (Next MBS MAP change indication = 1) {	—	—
Next MBS No. OFDMA symbols	~~2 bits~~ 6 bits	It is to indicate the size of MBS_MAP message in Next MBS portion where the BS shall transmit the next MBS frame for multicast CIDs in this IE.
Next MBS No. OFDMA subchannels	6 bits	It is to indicate the size of MBS_MAP message in Next MBS portion where the BS shall transmit the next MBS frame for multicast CIDs in this IE.
}	—	—
}	—	—
}	—	—

OFDMA symbol offset

This indicates starting position of the region for HARQ-coded MBS bursts ~~Bursts~~ allocated in the frame as indicated by ~~with the same~~ MBS_Burst_Frame_offset. There are two possible cases for the starting points of the MBS HARQ region:

1) If the “OFDMA symbol offset” points to the start point of the MBS zone with MBS MAP, then the MBS HARQ region allocated by this MBS_DATA_Time_Diversity_IE begins right after the MBS_MAP; and the MBS HARQ data sub-bursts specified in this MBS_DATA_Time_Diversity_IE are allocated in a frequency-first one-dimensional way starting from the same symbol as the MBS_MAP and the subchannel logically numbered after the largest subchannel occupied by the MBS MAP.

2) Otherwise, the MBS HARQ region defined by the MBS_DATA_Time_Diversity_IE ~~The region~~ begins from the first subchannel of the OFDMA ~~OFDM~~ symbol; and in this region, MBS HARQ data sub-bursts, indicated by MBS_DATA_Time_Diversity_IE ~~at the same MBS_MAP message,~~ are allocated in a frequency-first one-dimensional way ~~in the order of MBS_DATA_Time_Diversity_IE at a MBS_MAP message~~.

# of HARQ Data Sub-bursts ~~MBS_DATA_Time_Diversity_IEs with the same MBS Burst Frame Offset~~

This indicates the number of HARQ Data Sub-bursts that are allocated in the MBS HARQ region specified by this MBS_DATA_Time_Diversity_IE. ~~MBS_DATA_Time_Diversity_IEs with the same MBS Burst Frame Offset that are specified this the MBS MAP message.~~