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Title	**MBS DATA Time Diversity IE Corrections**	
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Re:	P802.16 Sponsor Ballot Recirculation 1 (as announced in IEEE 802.16-08/052)	
Abstract	IEEE 802.16 standard specifies an MBS DATA Time Diversity IE. This IE has several deficiencies that this contribution attempts to correct.	
Purpose	Review and adopt.	
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MBS DATA Time Diversity IE Corrections

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Background

The MBS DATA Time Diversity IE (see section 6.3.2.3.52) is inefficient. We propose to redesign this IE using vertical optimization techniques used by other REV2 IEs as follow:

1. Typically the IE specifies several sub-bursts for the same MCID. For each sub-burst, a12-bit MCID is added to the IE, which is inefficient. We propose to add a 1-bit flag to indicate whether the MCID for the current sub-burst is different from the preceding sub-burst and only include the MCID if it has changed.
2. Typically, the sub-bursts in the allocation will have the same N_{EP} sand N_{SCH} values. We propose to add a 1-bit flag to indicate whether the MCID for the current sub-burst is different from the preceding sub-burst and only include the MCID if it has changed.
3. Next MBS frame offset or Next MBS Symbol offset only changes if the MCID changes and may remain unchanged even when the MCID has changed. We propose to add a 1-bit flag to indicate whether the Next MBS frame offset or Next MBS Symbol offset for the current sub-burst is different from the preceding sub-burst and only include the Next MBS frame offset and Next MBS Symbol offset if it has changed.

The efficiency improvement resulting from this redesign is considerable. The size of an MBS DATA Time Diversity IE that describes 4 sub-bursts for the same MCID is halved (96 bits vs. 192 bits). If the size of the next MBS-MAP message for the MCID is different from the current MBS-MAP, the reduction is even greater (108 bits vs. 240 bits).

Proposed Changes

[Page 257, line 35 through page259, line 12, modify text as follows:]

Table 159—MBS DATA Time Diversity IE format

Syntax	Size (bit)	Notes
MBS_DATA_Time_Diversity_IE() {	--	--
MBS_MAP Type = 1	2	~~--~~See Table 156
MBS Burst Frame Offset	2	This indicates the burst located by this IE will be shown after MBS Burst Frame offset + 2 frames
OFDMA symbol offset	8	This indicates starting position of the region of MBS ~~B~~bursts with respect to start of the next (MBS Burst Frame offset + 2)-th frame.
# of Data Sub-bursts	4 ~~bits~~	n = # of Data Sub-bursts with the same frame offset
for(i = 0; i < n; i++){	--	--

Multicast MCID change indication	1	Indicates if the MCID for this sub-burst is different from the MCID for sub-burst in the preceding iteration of this for-loop. In the first iteration this bit is set to 1.
if (Multicast MCID change indication == 1) {	--	--
Multicast CID	12	12 LSBs of CID for multicast
}		
N_{EP}, N_{SCH} change indication	1	Indicates if the N_{EP} or N_{SCH} for this sub-burst is different from the N_{EP} or N_{SCH} in the preceding iteration of this for-loop.
if (N_{EP}, N_{SCH} change indication == 1) {	--	--
N_{EP} ~~code~~	4	~~—~~See Table 533
N_{SCH} ~~code~~	4	~~—~~See Table 533
}	--	--
AI_SN	1	--
SPID	2	--
ACID	4	--
Next MBS MAP change indication	1	This indicates whether the size of MBS MAP message of next MBS frame for thisese multicast CIDs ~~included this IE~~ will be different from the size of this MBS MAP message.
Next MBS offset change indication	1	Indicates whether the Next MBS frame offset or Next MBS Symbol offset are different from the offsets in the preceding iteration of this for-loop.
if (Next MBS offset change indication == 1) {	--	--
Next MBS frame offset	8	--
Next MBS OFDMA Symbol offset	8	--
}	--	--
if (Multicast MCID change indication & Next MBS MAP change indication == 1) {	--	--
Next MBS No. OFDMA symbols	6	I~~t is to i~~ndicates 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	I~~t is to i~~ndicates 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.

}	--	
}	--	
}	--	