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Re:	IEEE P802.16-REVd/D5		
Abstract	This contribution introduces corrections to the UL IE for support of AAS in the OFDMA PHY		
Purpose	Adopt into P802.16d/D5 corrigenda		
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Corrections for UL IE to support AAS in OFDMA PHY

Dave Pechner, Todd Chauvin, Doug Dahlby

1 Problems with the current UL IE definition

AAS operation requires uplink and downlink bandwidth allocations to have absolute time-frequency reference points. This is required for several reasons:

1) To support SDMA, multiple users are allocated the same time-frequency allocation.
2) AAS operation will utilize private maps which will not have information on other bandwidth allocations. Therefore relative allocations are not possible.

Currently, the UL IE specifies relative allocations for allocations in an AAS zone.

2 Outline of proposed solution

The following changes are proposed. Specific text changes are presented in the next section.

- Introduce a slot offset field in the in the UL map IE for allocations in an UL AAS zone.

3 Proposed Text Changes

[Modify section 8.4.5.4:]

8.4.5.4 UL-MAP IE format

The OFDMA UL-MAP IE defines uplink bandwidth allocations. Uplink bandwidth allocations are specified either as block allocations (subchannel by symbol) with an absolute offset, as an allocation with duration in slots with either a relative or absolute slot offset. Block allocations are used for CDMA ranging and BW request allocations as well as PAPR/Safety zone allocations. Slot allocations are used for all other UL bandwidth allocations. For UL allocations in non-AAS zones, the starting position for the allocation is determined considering the prior allocations appearing in the UL-MAP. For UL allocations in an AAS UL Zone, the starting position is included in the UL IE indicating an absolute slot offset from the beginning of the AAS zone. If an OFDMA UL-MAP IE with UIUC=12 or UIUC=13 exists, they must be always allocated first.

For the first OFDMA UL-MAP IE with UIUC other than 12 or 13, the allocation shall start at the lowest numbered non-allocated subchannel on the first non-allocated OFDMA symbol defined by the allocation start time field of the UL-MAP message which are not allocated with UIUC=12 or UIUC=13 (See Table 217 for an example). These IEs shall represent the number of slots provided for the allocation. Each allocation IE shall start immediately following the previous allocation and shall advance in the time

domain. If the end of the UL frame has been reached, the allocation shall continue at the next subchannel at first OFDMA symbol (define by the allocation start time field) which is not allocated with UIUC=12 or UIUC=13.

The CID represents the assignment of the IE to either a unicast, multicast, or broadcast address. A UIUC shall be used to define the type of uplink access and the burst type associated with that access. A Burst Descriptor shall be specified in the UCD for each UIUC to be used in the UL-MAP. The format of the UL-MAP IE is defined in Table 285.

[Modify Table 285 in Page 534 as follows:]

Table 285—OFDMA UL-MAP IE format

Syntax	Size	Notes
UL-MAP_IE() {		
CID	16 bits	
UIUC	4 bits	
If (UIUC == 12) {		
OFDMA Symbol offset	8 bits	
Subchannel offset	7 bits	
No. OFDMA Symbols	7 bits	
No. Subchannels	7 bits	
Ranging Method	2 bits	0b00 - Initial Ranging over two symbols 0b01 - Initial Ranging over four symbols 0b10 - BW Request/Periodic Ranging over one symbol 0b11 - BW Request/Periodic Ranging over three symbols
reserved	1 bit	Shall be set to zero
else if (UIUC == 14) {		
CDMA_Allocation_IE()	32 bits	
else if (UIUC == 15) {		
Extended UIUC dependent IE	Variable	See clauses following 8.4.5.4.3
} else {		
Duration	10 bits	In OFDMA slots (see 8.4.3.1)
Repetition coding indication	2 bits	0b00 - No repetition coding 0b01 - Repetition coding of 2 used 0b10 - Repetition coding of 4 used 0b11 - Repetition coding of 6 used
if (AAS UL Zone){		AAS Allocations include absolute slot offset.
Slot offset	12 bits	Offset from start of the AAS zone for this allocation, specified in slots.
}		
Padding nibble, if needed	4 bits	Completing to nearest byte, shall be set to 0.
}		