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Re:	IEEE P802.16e/D5a-2004
Abstract	Band-AMC operation and CQI report mechanism for the band-AMC using normal DL/UL-MAP are proposed
Purpose	Adopting of proposed method into P802.16e
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Band AMC operation in normal DL/UL-MAP

1. Introduction

The adjacent-subcarrier permutation defined in 8.4.6.3 has benefits for AAS and band-AMC operations. The CQI feedback mechanism for the band-AMC operation when using H-ARQ MAP is well defined in the current standard. However, when the normal DL-MAP is used for band-AMC, the CQI feedback mechanism is not clear.

In this contribution, band-AMC operation and CQI feedback mechanism for the band-AMC in the normal DL/UL-MAP are proposed.

2. Suggested Text Changes

8.4.5.4 UL-MAP IE format

[Modify table 285 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
Dedicated ranging indicator	1 bit	0: the OFDMA region and Ranging Method defined are used for the purpose of normal ranging 1: the OFDMA region and Ranging Method defined are used for the purpose of ranging using dedicated CDMA code assigned in the MOBPAG-ADV message.
} else if (UIUC == 13) {		
PAPR_Reduction_and_Safety_Zone_Allocation_IE	32 bits	
} 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 or AMC UL Zone){		AAS/AMC Allocations include absolute slot offset.
Slot offset	12 bits	Offset from start of the AAS or AMC zone for this allocation, specified in slots.
}		
}		
Padding nibble, if needed	4 bits	Completing to nearest byte, shall be set to 0.
}		

8.4.6.3 Optional permutations for AAS and AMC subchannels

[At the end of this section, modify the following text as indicated:]

In the region mapped according to H-ARQ MAP in section 6.3.2.3.43, ~~T~~there are four types of AMC subchannels which are different in the collection of 6 bins in a band. In the first type(default type), the available bins in a band are enumerated by starting from the lowest bin in the first symbol to the last bin in the symbol and then going to the lowest bin in the next symbol and so on. A subchannel consists of 6 consecutive bins in this enumeration. The second type is 2 bins by 3 symbols, the third type is 3 bins by 2 symbols and the last type is 1 bin by 6 symbols. In the last three types, enumeration of bins in a subchannel is the same as in the first type. ~~In all the types, the index of the subchannels in a band is increased along bins and then symbols.~~

In the region mapped according to normal DL/UL-MAP in section 8.4.5.3 and 8.4.5.4, there is only one type of AMC subchannel which consists of 2 bins by 3 symbols.

In all the types, data mapping follows section 8.4.3.4 except for region mapped according to section 6.3.2.3.43. Slots for downlink AMC zone in a region mapped according to section 6.3.2.3.43 are allocated along the subchannel index first within a band. The direction of data mapping for downlink AMC slots shall be frequency first (across bands when multiple bands are allocated).

Slots for uplink AMC zone in a region mapped according to section 6.3.2.3.43 are allocated along the symbol index first within a band. The direction of data mapping for uplink AMC slots shall be frequency first (across bands when multiple bands are allocated).

[Insert the following section 8.4.6.3.1 as follows]

8.4.6.3.1 Band-AMC operation in normal DL/UL-MAP

This section describes the band-AMC operation, which is designed for band-AMC enabled SS using normal DL/UL-MAP. The SS sends the REP-RSP message in an unsolicited fashion to BS to trigger Band AMC operation. The triggering conditions are given by TLV encodings in UCD messages. The REP-RSP (see 11.12 for the TLV encodings) includes the CINR measurements of five best bands. The band definition is in table 90, and the Max Logical Bands is set as '10' (12 bands).

The BS acknowledges the trigger by allocating Band AMC subchannels. From the next frame when the SS sent the REP-RSP, the SS starts reporting the differential of CINR five selected bands (increment: 1 and decrement: 0 with a step of 1 dB) on its allocated fast feedback channel (CQICH). If the BS does not allocate the Band AMC subchannels within the specified delay (CQICH Band AMC Transition Delay) in the UCD message, the SS reports the updated average CINR for the allocation of subchannel with distributed subcarrier permutation.

When the BS wants to trigger the transition to Band AMC mode or update the CINR reports, it sends the REP-REQ message (see 11.11 for the TLV encodings). When the SS receives the message, it replies with REP-RSP. When the BS receives the REP-RSP, it should synchronize the selection of bands reported and their CINR. Unless the BS allocates subchannels with distributed subcarrier permutation, the SS reports the differential increment/decrement compared to the most up-to-date report from the next CQI reporting frame.