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Abstract	In the current IEEE P802.16e/D5, the MBS is introduced, and the message MBS-MAP is introduced to support Macro Diversity. DIUC in the message MBS-MAP indicates the modulation coding scheme of the corresponding burst. However, DIUC is defined in the DCD message by the serving BS. That is to say, all BSs in the same MBS ZONE should synchronize their DCD messages, which mean additional complexity to the system. We propose to add a new message MBS-DCD in the MBS ZONE to define the DIUC values used in the MBS_MAP of the current MBS ZONE.	
Purpose	Adoption	
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# The Enhancement to Macro Diversity in MBS Service

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## 1. Introduction

In the current IEEE P802.16e/D5, the MBS is introduced as one of the major features. On one hand, it supports performance enhancement with Macro Diversity. On the other hand, it supports power-efficient reception in idle mode and sleep mode. For the realization of the above enhancements, the message MBS-MAP is introduced.

Inside the MBS zone a MBS\_MAP message is transmitted and functions like a DL-MAP in the sense that it provides the physical attributes for the connection allocated to the MBS zone, such as the burst allocated to the specific multicast CID and the modulation and coding scheme of the corresponding burst. In addition to this functionality, the MBS\_MAP provides per each connection the location of the next frame where data will be sent on it.

The DIUC in the message MBS-MAP indicates the modulation and coding scheme of the burst. However, the DIUC is defined in the DCD message by the serving BS. That is to say, all BSs in the same MBS ZONE should synchronize their DCD message in order to the DIUCs at different BS indicate the same modulation and coding scheme, which means additional complexity of the system.

We propose to add a new message MBS-DCD in the MBS ZONE to define the DIUC used in the MBS\_MAP of the current MBS ZONE, just as the message DCD in the downlink frame. The DIUC defined in the message MBS-DCD shall be only used in the current MBS ZONE, and can be inconsistent with that defined in the DCD of the serving BS. The MBS server manages and transmits the message MBS-DCD, just as the MBS-MAP. At the same time, we add the information element "MBS count" in the message MBS-MAP to trace the change of the message MBS-DCD.

## 2. Proposed Text Changes

[Modify the corresponding sections as follows:]

[Change Table 107 in section 6.3.2.3.56 as the following]

Syntax	Size	Notes
MBS-MAP_Message_Format() {		
Management Message Type = ?	8 bits	
MBS-DCD count	8 bits	
Frame number	24 bits	The frame number is identical to the frame number in the DL-MAP
for (i = 0; i < n; i++) {		
Multicast CID	12 bits	12 LSB of CID for multicast
DIUC	4 bits	
OFDMA Symbol offset	8 bits	OFDMA symbol offset with respect to start of the MBS zone
Subchannel offset	6 bits	
Boosting	3 bits	000: normal (not boosted); 001: +6dB; 010: -6dB; 011: +9dB; 100: +3dB; 101: -3dB; 110: -9dB; 111: -12dB;
No. OFDMA Symbols	7 bits	
No. Subchannels	6 bits	
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
Next MBS frame offset	8 bits	The Next MBS frame offset value is lower 8 bits of the frame number in which the BS shall transmit the next MBS frame.
Next MBS OFDMA Symbol offset	8 bits	The offset of the OFDMA symbol in which the next MBS zone starts, measured in OFDMA symbols from the beginning of the downlink frame in which the MBS-MAP is transmitted.
}		
if !(byte boundary) {		
Padding Nibble	4 bits	Padding to reach byte boundary.
}		
}		

[Add the following section]

### 6.3.2.3.59 MBS-DCD

The BS may send an MBS-DCD message on an MBS zone to describe the modulation and coding schemes used in the MBS zone. When a MBS-DCD is sent, the connections need to be described in the MBS-MAP.

Table xxx—MBS- DCD

<i>Syntax</i>	<i>Size</i>	<i>Notes</i>
<i>DCD Message Format() {</i>		
<i>  Management Message Type = ?</i>	<i>8 bits</i>	<i>MBS_MAP = 0x05</i>
<i>  Configuration Change Count</i>	<i>8 bits</i>	
<i>  Begin PHY Specific Section {</i>		<i>See applicable PHY section</i>
<i>    for (i = 1; i &lt;= n; i++) {</i>		<i>For each downlink burst profile 1 to n</i>
<i>      Downlink Burst Profile</i>		<i>PHY specific</i>
<i>    }</i>		
<i>  }</i>		
<i>}</i>		