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DL subchannelization for OFDM mode

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1. Introduction

It is proposed to enhance the OFDM mode by introducing DL subchannelization (DL OFDMA) as an optional extension. DL subchannelization can improve the reuse factor and the link budget. DL subchannelization can also reduce the overheads associated with preambles, when operating in conjunction with AAS techniques

2. Specific text changes

<< Add in 8.3.5.3.1 after the paragraph about STC zone>>

The DL sub-frame may optionally contain a DL subchannelization zone as described in 8.3.5.3 PMP-DL subchannelization Zone.

<<Add section>>

8.3.5.3 PMP DL subchannelization.

The DL sub-frame may optionally contain a DL subchannelization zone. This zone is marked by a DL_SUBCH_IE in the DL Map.

The DL subchannelization zone is shown in Figure 1.

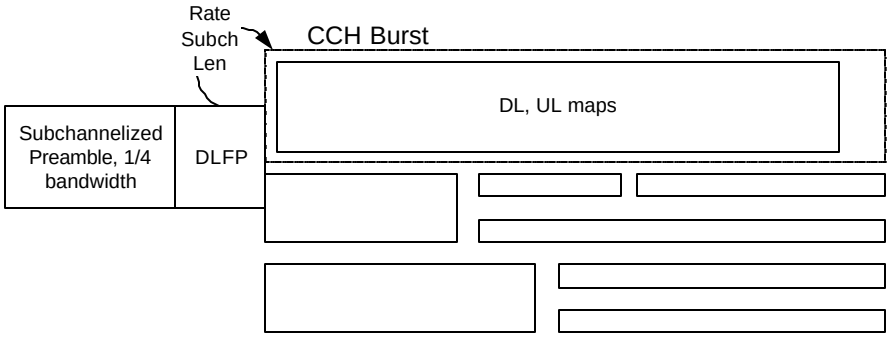

Figure 1 Format of DL Subchannelization section

The zone commences with a subchannelized preambale followed by a subchannelized FCH burst. The FCH is transmitted using QPSK ½. The FCH is transmitted over the 1/4 of the bandwidth. The carrier allocation is as given in table 211 (OFDM symbol parameters). The subchannel index of the FCH is derived from the 2 LSB of the BSID as in table XXX.

2 LSB of BSID	Subchannel index (according to table 211)	Notes
0b00	0b00100	
0b01	0b01100	
0b10	0b10100	
0b11	0b11100	

The FCH contains the SBCH_DLFP, which points to the control subchannel (CCH), and contains the profile and length of the first burst in it. The SBCH_DLFP is shown in Table 1.

Field	Size	Comments
SBCH_DL_Frame_Prefix_Format() {		
Base_Station_ID	4 bits	4 LSBs of BS ID. The burst specified by the DFLP shall not be decoded if these bits do not match those of the BS on which it is registered
Frame_Number	4 bits	bits 4 LSBs of Frame Number field as specified in Table 214
Configuration_Change_Count	4 bits	4 LSBs of Change Count value as specified in 6.3.2.3.1
Reserved	5bit	Shall be set to zero.
CCH subchannel index	5bits	The subchannel index, in which the CCH is transmitted. See table 192.
CCH_Rate ID	4bits	The Rate ID, according to table XXX, of the first burst of the CCH.
CCH duration	4bits	The duration of the first burst in the CCH.
CCH midamble repetition	2bits	The midamble repetition rate of the first burst of the CCH.
HCS	8bits	An 8-bit Header Check Sequence; calculated as specified in Table 5
}		
Total	40	

Table 1 Format of SBCH_DLFP

The FCH is followed by subchannelized traffic on some of the subchannels. The same carrier of table 211 is used. Bursts in the DL subchannelized zone shall contain midambles when indicated in the midamble repetition field.

The CCH may carry UL and DL maps. UL maps shall use the format of UL_MAP_IE as in table 243 (UL map IE). DL maps shall use the format if SBCH_DL_MAP_IE as in table XXX.

Note to editor << add table XXX SBCH_DL_MAP IE format.
Copy table 243 (UL map IE) and following changes:
Change UIUC to DIUC
delete rows beginning with UIUC==4… to end of table.
>>

A BST shall assume that the SS is not capable of receiving more than one burst in a single frame. For AAS support, CCH bursts may be transmitted on directed beams or may be transmitted using beam pattern diversity.

<<Add section>>

8.3.6.2.6 DL SUBCH_IE format

In the DL-MAP a DL subchannelization enabled BST (see 8.3.5.3) may transmit an extend IE with value of 0x05 to indicate that subsequent allocations use DL subchannelization. The DL_SUBCH_IE shall be the last element in the downlink map.

Syntax	Size	Comments
DL_SUBCH_IE{		
Extended DIUC	4bits	DL_SUBCH=0x05
Length	4bits	Length=0x00
}		

<<Change in DL-MAP Dummy IE format>>
0x05…0x0F to 0x06…0x0F