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Title	**Changes of Reference Symbol Offset for Rotating Pilots in O-FUSC and AMC subchannels**
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Re:	IEEE P802.16e/D6
Abstract	Changes of Reference Symbol Offset for Rotating Pilots in O-FUSC and AMC subchannels
Purpose	Adopting of proposed method into P802.16e
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Changes of Reference Symbol Offset for Rotating Pilots in O-FUSC and AMC subchannels

1. Introduction

In the current standard (IEEE 802.16e/D6), the positions of pilot tones for optional FUSC (O-FUSC) and AMC subchannels are rotated with the symbol index value which is referred to the first symbol of the frame, i.e. preamble. Then the pattern of pilot tones may vary according to the start symbol offset of each zone for O-FUSC or AMC.

The fixed pattern of pilot tones regardless of the start symbol offset of each zone can be helpful for easy implementation of subscribers, but there is no performance degradation. In this contribution, the reference symbol offset for rotating pilots in O-FUSC and AMC subchannels is changed to be the very first symbol of each zone.

2. Suggested Text Changes

(1) Make changes in Table 312a, Table 312b, and Table 312c (from page 383, line 1 to page 384, line 28) as follows:

Table 312a—1024-FFT OFDMA downlink carrier allocations – Optional FUSC

Parameters	Value	Comments
Number of DC Subcarriers	1	
Number of Guard Subcarriers, Left	80	
Number of Guard Subcarriers, Right	79	
Number of Used Subcarriers(N_{used}) (Including all possible allocated pilots and the DC subcarrier)	865	
Number of Pilot Subcarriers	96	
Pilot Subcarrier Index	9k+3m+1 for k=0,1…95 and m=[symbol index] mod 3	Symbol of index 0 in pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.
Number of Data Subcarriers	768	
Number of Data Subcarriers per Subchannel	48	

Table 312b—512-FFT OFDMA downlink carrier allocations – Optional FUSC

Parameters	Value	Comments
Number of DC Subcarriers	1	
Number of Guard Subcarriers, Left	40	
Number of Guard Subcarriers, Right	39	
Number of Used Subcarriers(N_{used}) (Including all possible allocated pilots and the DC subcarrier)	433	
Number of Pilot Subcarriers	48	
Pilot Subcarrier Index	9k+3m+1	Symbol of index 0 in

	for k=0,1…47 and m=[symbol index] mod 3	pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.
Number of Data Subcarriers	384	
Number of Data Subcarriers per Subchannel	48	

Table 312c—128-FFT OFDMA FUSC downlink carrier allocations – Optional FUSC

Parameters	Value	Comments
Number of DC Subcarriers	1	
Number of Guard Subcarriers, Left	10	
Number of Guard Subcarriers, Right	9	
Number of Used Subcarriers(N_{used}) (Including all possible allocated pilots and the DC subcarrier)	109	
Number of Pilot Subcarriers	12	
Pilot Subcarrier Index	9k+3m+1 for k=0,1…11 and m=[symbol index] mod 3	Symbol of index 0 in pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.
Number of Data Subcarriers	96	
Number of Data Subcarriers per Subchannel	48	

(2) Make changes in Table 316a, Table 316b, and Table 316c (from page 400, line 20 to page 401, line 65) as follows:

Table 316a—1024-FFT OFDMA AMC subcarrier allocations

Parameter	Value	Notes
Number of DC Subcarriers	1	
Number of Guard Subcarriers, Left	80	
Number of Guard Subcarriers, Right	79	
Number of Used Subcarriers (N_{used}) (including all possible allocated pilots and the DC sibcarrier)	865	
Number of Pilot Subcarriers	96	
Pilot Subcarrier Index	9k+3m+1 for k=0,1…95 and m=[symbol index] mod 3	Symbol of index 0 in pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.
Number of Data Subcarriers	768	
Number of Bands	24	
Number of Bins per Band	4	
Number of Data Subcarriers per Subchannel	48	

Table 316b—512-FFT OFDMA AMC subcarrier allocations

Parameter	Value	Notes
Number of DC Subcarriers	1	
Number of Guard Subcarriers, Left	40	
Number of Guard Subcarriers, Right	39	
Number of Used Subcarriers (N_{used}) (including all possible allocated pilots and the DC sibcarrier)	433	
Number of Pilot Subcarriers	48	

Pilot Subcarrier Index	**9k+3m+1 for k=0,1…47 and m=[symbol index] mod 3**	**Symbol of index 0 in pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.**
Number of Data Subcarriers	**384**	
Number of Bands	**12**	
Number of Bins per Band	**4**	
Number of Data Subcarriers per Subchannel	**48**	

Table 316c—128-FFT OFDMA AMC subcarrier allocations

Parameter	Value	Notes
Number of DC Subcarriers	**1**	
Number of Guard Subcarriers, Left	**10**	
Number of Guard Subcarriers, Right	**9**	
Number of Used Subcarriers (N_{used}) (including all possible allocated pilots and the DC sibcarrier)	**109**	
Number of Pilot Subcarriers	**12**	
Pilot Subcarrier Index	**9k+3m+1 for k=0,1…11 and m=[symbol index] mod 3**	**Symbol of index 0 in pilot subcarrier index should be the first symbol of the ~~frame~~ current zone.**
Number of Data Subcarriers	**96**	
Number of Bands	**3**	
Number of Bins per Band	**4**	
Number of Data Subcarriers per Subchannel	**48**	