

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	[Modification of training sequence for OFDM subchannelization]	
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Re:		
Abstract	This document contains analysis and proposal for preamble of the OFDM sub-channelization system.	
Purpose	This proposal provide and proposal for preamble of the OFDM sub-channelization system.	
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3	7.4339
4	6.9715
1+3	5.4292
2+4	5.9841
1+2+3+4	3.5805

5. Change to clause 5.6 in [1]

Replace the paragraph:

If in the UL, if the allocation spans less than the whole OFDM symbol (i.e. when subchannelization is used), the preamble carriers that do not fall within the subchannels allocated shall not be transmitted.

With:

If in the UL, if the allocation spans only one sub-channel, the following preamble vector is used in conjunction with subchannelization transmissions, and the preamble carriers that do not fall within the subchannels allocated shall not be transmitted.

$$P_{1\text{subch}}(-100:100)=\{$$

-1	0	1	0	1	0	-1	0	-1	0	-1	0		[-100:-89] subch1
-1	0	-1	0	-1	0	1	0	-1	0	1	0	1	[-88:-76] subch2
0	-1	0	-1	0	1	0	-1	0	-1	0	-1		[-75:-64] subch3
0	-1	0	1	0	1	0	-1	0	-1	0	-1	0	[-63:-51] subch4
1	0	1	0	1	0	-1	0	1	0	-1	0		[-50:-39] subch1
-1	0	1	0	-1	0	-1	0	1	0	-1	0	-1	[-38:-26] subch2
0	-1	0	1	0	-1	0	-1	0	-1	0	1	0	[-25:-14] subch3
0	1	0	1	0	1	0	-1	0	1	0	-1	0	[-13:-1] subch4
0													
0	1	0	-1	0	1	0	1	0	-1	0	-1	0	[1:13] subch1
1	0	-1	0	-1	0	1	0	1	0	1	0		[14:25] subch2
-1	0	1	0	1	0	1	0	-1	0	-1	0	-1	[26:38] subch3
0	1	0	-1	0	1	0	1	0	-1	0	-1		[39:50] subch4
0	-1	0	-1	0	-1	0	-1	0	1	0	-1	0	[51:63] subch1
1	0	-1	0	1	0	1	0	1	0	-1	0		[64:75] subch2
-1	0	1	0	1	0	1	0	1	0	-1	0	1	[76:88] subch3
0	-1	0	-1	0	-1	0	-1	0	1	0	-1		[89:100] subch4

$$\}*\sqrt{2}*\sqrt{2}$$

If the allocation spans only two sub-channels, the following preamble vector is used in conjunction with subchannelization transmissions, and the preamble carriers that do not fall within the subchannels allocated shall not be transmitted.

$$P_{2\text{subch}}(-100:100)=\{$$

-1	0	1	0	1	0	-1	0	1	0	-1	0		[-100:-89] subch1+subch3
-1	0	-1	0	1	0	-1	0	1	0	-1	0	1	[-88:-76] subch2+subch4
0	-1	0	1	0	1	0	1	0	1	0	1		[-75:-64] subch1+subch3
0	-1	0	1	0	-1	0	1	0	1	0	-1	0	[-63:-51] subch2+subch4
1	0	1	0	1	0	-1	0	-1	0	-1	0		[-50:-39] subch1+subch3
-1	0	-1	0	1	0	1	0	-1	0	1	0	-1	[-38:-26] subch2+subch4
0	-1	0	1	0	1	0	-1	0	-1	0	-1		[-25:-14] subch1+subch3
0	-1	0	1	0	-1	0	1	0	1	0	-1	0	[-13:-1] subch2+subch4
0													
0	1	0	1	0	1	0	-1	0	1	0	1	0	[1:13] subch1+subch3
1	0	1	0	1	0	-1	0	1	0	1	0		[14:25] subch2+subch4
-1	0	1	0	1	0	-1	0	1	0	1	0	-1	[26:38] subch1+subch3
0	1	0	1	0	-1	0	-1	0	1	0	1		[39:50] subch2+subch4
0	1	0	1	0	-1	0	1	0	-1	0	1	0	[51:63] subch1+subch3
-1	0	-1	0	-1	0	-1	0	1	0	-1	0		[64:75] subch2+subch4
-1	0	-1	0	-1	0	1	0	-1	0	-1	0	-1	[76:88] subch1+subch3
0	1	0	1	0	1	0	-1	0	-1	0	-1		[89:100] subch2+subch4

}*sqrt(2)*sqrt(2)

6. Conclusion

The proposal sequences have lower PAPR.

Sub-channel	PAPR (proposal)
1	2.3889dB
2	2.3230dB
3	2.3230dB
4	2.38896dB
1+3	3.0551dB
2+4	3.0582dB

7. Summary

If we make “OFDM sub-channelization” as a part of 802.16a, then I propose add two more preambles for sub-channelization purpose.