

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Modified pilot allocation for 4 BS transmit antennas	
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Re:		
Abstract	Pilot allocations for 4 transmit antennas in optional FUSC and Band AMC	
Purpose	Adoption of proposed changes into P802.16e Crossed-out indicates deleted text, <u>underlined blue indicates new text change to the Standard</u>	
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Pilot Allocations for 4 Transmit Antennas in optional FUSC and Band AMC

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Abstract

Closed-loop MIMO can benefit from a large number of transmit antennas by conducting transmit beamforming. Pilot allocations for up to 4 transmit antennas are defined in section 8.4.8.3.

In this contribution, an improved pilot allocation for 4 transmit antennas is derived. The new pilots occupy the same block locations as before. The new pilots for each antenna are evenly spread across frequency and time as much as possible, which eases the tracking of the channel variations in time and minimizes the channel estimation/interpolation complexity.

1 Pilot allocations for 4 transmit antennas

For 4-antenna base station (BS), pilot pattern is shown in Figure 1. The pilots has a periodicity of 9 in frequency axis, and a periodicity of 2 in time axis. The locations of the pilot tone is interleaved to maximize the uniformity of the distribution in freq-time plane. The periodic placement makes the interpolation and tracking easier. The pilot density of each antenna is 1/18.

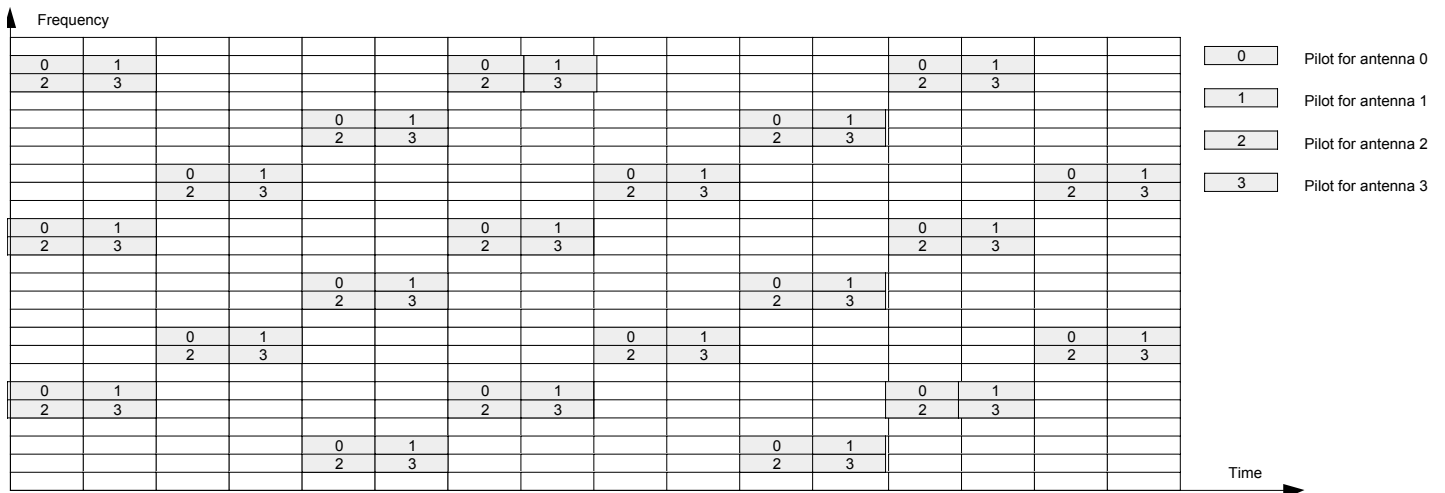


Figure 1 Pilot allocation for 5-antenna BS for the optional FUSC and the optional AMC zones.

2 Specific Text Changes

[replace Fig 251c in section 8.4.8.3.2]

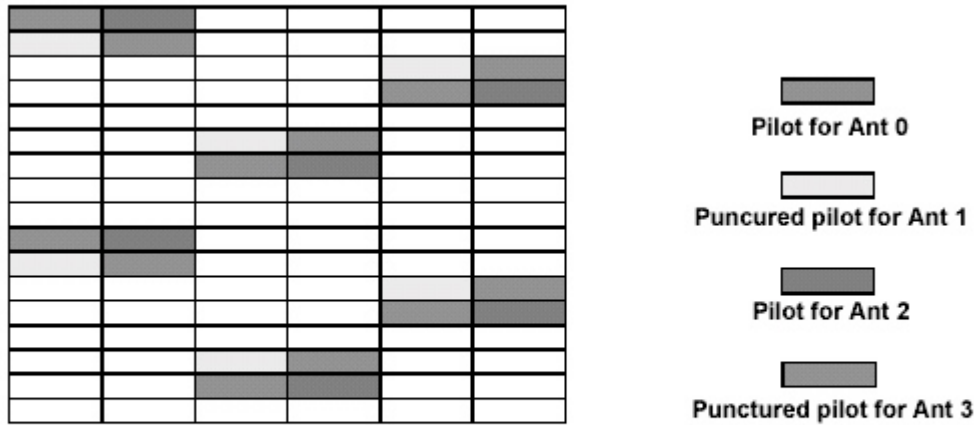


Figure 251c—Pilot allocation for 4-antenna BS for the optional FUSC and the optional AMC zones

[by] For 4-antenna base station (BS), pilot pattern is shown in Figure 1. The pilots has a periodicity of 9 in frequency axis, and a periodicity of 2 in time axis. The locations of the pilot tone is interleaved to maximize the uniformity of the distribution in freq-time plane. The periodic placement makes the interpolation and tracking easier. The pilot density of each antenna is 1/18.

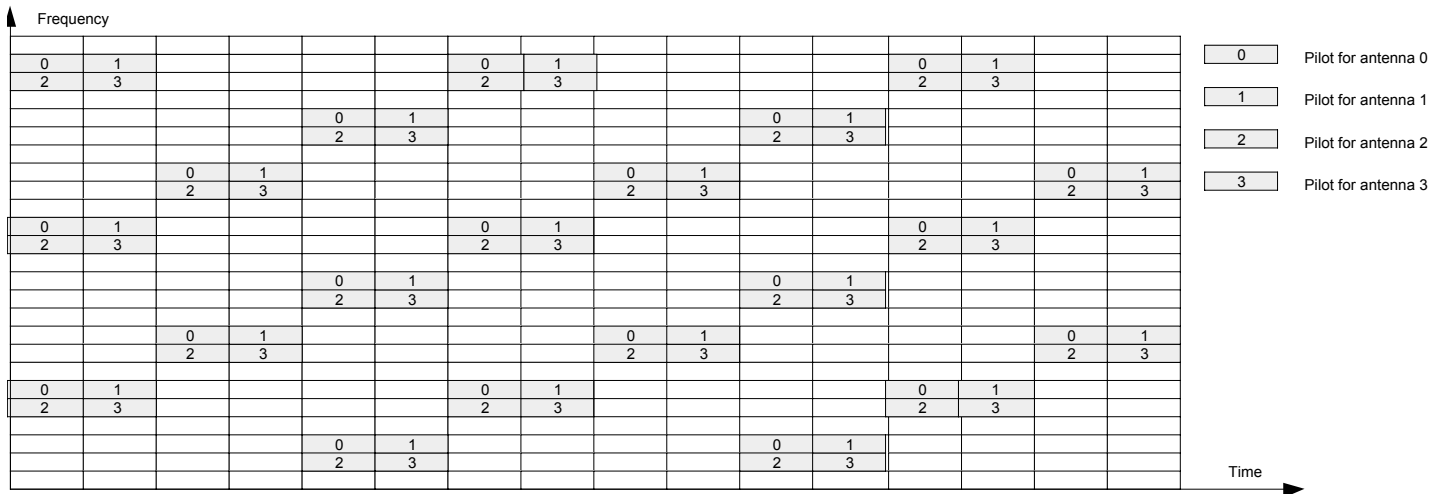


Figure 251c Pilot allocation for 4-antenna BS for the optional FUSC and the optional AMC zones.

References:

[1] IEEE P802.16e/D5 Air Interface for Fixed and Mobile Broadband Wireless Access Systems – Amendment for Physical and Medium Access Control Layers for Combined Fixed and Mobile Operation in Licensed Bands, 2004.

[2] IEEE P802.16-REVd/D5-2004 Draft IEEE Standards for local and metropolitan area networks, Part 16: Air interface for fixed broadband wireless access systems, 2004.

[3] Recommendation ITU-R M.1225, Guidelines for Evaluation of Radio Transmission Technologies for IMT-2000, 1997.