Clarification on uplink MIMO for relay station with multiple antennas

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Clarification on Uplink MIMO for Relay Station with Multiple Antennas

1. Introduction

In IEEE 802.16 working group letter ballot #28, some comments point out that the superscripts in figure 306a and 306b are not clearly defined [1][2] and the meaning of the pilot subcarrier are ambiguous [3]. In this contribution, the meanings of the superscripts are clarified and in order to avoid the ambiguous meaning of the pilot subcarrier, the “pilot subcarrier” and “+ pilot subcarrier” are incorporated as “+ pilot subcarrier” in figure 306a and 306b because they have the same meaning.

2. Proposed Text

In the following, the text in black denotes the original text in IEEE P802.16j/D1[4] and the text in blue denotes the new added text.

8.4.8.1.5 Uplink using STC

Insert the following at the end of 8.4.8.1.5

For RS using three antennas, the MIMO coding matrices defined in 8.4.8.3.4 shall be mapped to the tile according to Figure 306a. One tile shall contain two MIMO coding matrices, i.e. $S^1$ and $S^2$, which can be $A_1, A_2, A_3, B_1, B_2$ or $B_3$ defined in 8.4.8.3.4. The elements of the two MIMO coding matrices should be mapped to tile according to Figure 306a, where $S^1_{mn}$ denotes the $m^{th}$ row $n^{th}$ column element of the first MIMO coding matrix and $S^2_{mn}$ denotes the $m^{th}$ row $n^{th}$ column element of the second MIMO coding matrix.

For RS using four antennas, the MIMO coding matrices defined in 8.4.8.3.5 shall be mapped to the tile according to Figure 306b. One tile shall contain two MIMO coding matrices, i.e. $S^1$ and $S^2$, which can be $A_1, A_2, A_3, B_1, B_2, B_3, B_4, B_5$ or $B_6$ defined in
8.4.8.3.5. The elements of the two MIMO coding matrices should be mapped to tile according to Figure 306b, where \( S_{mn}^1 \) denotes the \( m \)th row \( n \)th column element of the first MIMO coding matrix and \( S_{mn}^2 \) denotes the \( m \)th row \( n \)th column element of the second MIMO coding matrix.

![Figure 306b Mapping of data subcarriers for 4-antenna RS](image)

**3. References**


