

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >		
Title	<b>Layer to Stream and Stream to Antenna Mapping in UL MIMO</b>		
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Re:	IEEE 802.16m-08/040, Call for Comments and Contributions on Project 802.16m System Description Document (SDD), Topic: TGm SDD: Other		
Abstract	Proposed text changes for the sections on layer to stream and stream to antenna mapping in the UL MIMO section of the SDD		
Purpose	Discuss and adopt the proposed changes in the SDD		
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# Layer to Stream and Stream to Antenna Mapping in UL MIMO

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## Comment

The application of the STC matrix  $\mathbf{S}(\mathbf{x})$  is not part of the stream to antenna mapping but of the layer to stream mapping.

## Solution

Add in section “11.12.1.2 Layer to Stream Mapping” an equation describing the layer to stream mapping and remove the STC matrix from the equation in section “11.12.1.3 Stream to Antenna Mapping”.

## Proposed Text Changes

-----start of old text -----

### 11.12.1.2 Layer to Stream Mapping

For open-loop spatial multiplexing and closed-loop SU-MIMO, the number of streams,  $N_S \leq \min(N_T, N_R)$ . For open-loop transmit diversity modes,  $N_S$  depends on the STC schemes employed by the MIMO encoder and its value is specified in Table 11.10.2.1.1-1. For SU-MIMO and MU-MIMO, Vertical encoding (SCW) is employed [Support for MCW is FFS pending decisions in DL MIMO].

### 11.12.1.3 Stream to Antenna Mapping

The stream to antenna mapping depends on the MIMO scheme used. The mapping can be defined using the following equation

$$\mathbf{y} = \mathbf{P} \times \mathbf{S}(\mathbf{x}), \text{ Equation 24}$$

where  $\mathbf{P}$  is a pre-coding matrix,  $\mathbf{S}(\mathbf{x})$  is an STC matrix, and  $\mathbf{x}$  is the input layer vector.

-----end of old text -----

-----start of new text -----

### 11.12.1.2 Layer to Stream Mapping

For open-loop spatial multiplexing and closed-loop SU-MIMO, the number of streams,  $N_S \leq \min(N_T, N_R)$ . For open-loop transmit diversity modes,  $N_S$  depends on the STC schemes employed by the MIMO encoder and its value is specified in Table 11.10.2.1.1-1. For SU-MIMO and MU-MIMO, Vertical encoding (SCW) is employed

[Support for MCW is FFS pending decisions in DL MIMO].

The layer to stream mapping depends on the MIMO scheme used. The mapping can be defined using the following equation

$$\mathbf{z} = \mathbf{S}(\mathbf{x}), \text{ Equation 24}$$

where  $\mathbf{z}$  is the output of the MIMO encoder,  $\mathbf{S}(\mathbf{x})$  is an STC matrix, and  $\mathbf{x}$  is the input layer vector.

### 11.12.1.3 Stream to Antenna Mapping

The stream to antenna mapping depends on the MIMO scheme used. The mapping can be defined using the following equation

$$\mathbf{y} = \mathbf{P} \times \mathbf{z}, \text{ Equation 2425}$$

where  $\mathbf{P}$  is a pre-coding matrix, and  $\mathbf{z}$  is the output of the MIMO encoder.

-----end of new text -----