Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	Sub-Channel Concatenation for LDPC of SM with Vertical Encoding for Multiple Transmit Antennas
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Re:	IEEE 802.16-REVe/D7
Abstract	Clean up of the sub-channel concatenation for LDPC in the MIMO mode
Purpose	To incorporate the changes here proposed into the 802.16e D7 draft.
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Sub-Channel Concatenation for LDPC of SM with Vertical Encoding for Multiple Transmit Antennas

1 Introduction

The contribution IEEE C802.16e-05/082r2 was adopted during the last meeting with the modification for LDPC. However, the instruction is too general for the editor to make appropriate changes in the text. Therefore, no changes were made in IEEE P802.16e/D7. In this contribution, we made the changes needed for LDPC explicitly.

Table 333b is designed to apply to single transmit antenna case. For spatial multiplexing with Vertical Encoding for more than one antenna, the information bits carried by one sub-channel is multiplied by the number of transmit antennas. Therefore, we need to modify the concatenation Table 333b in order to accommodate increased data rate.

2 Text Proposal

Start text proposal

Modify the text in section 8.4.9.2.5.4

For any modulation and FEC rate, given an allocation of Nsch subchannels, we define the following parameters:

j_i: parameter dependent on the modulation and number of antennas in case of spatial multiplexing

N_{sch}: number of allocated subchannels

F: floor(N_{sch}/ j_i)

M: N_{sch} mod j_i

The subchannel concatenation rule for CC in Table 317 is applied, noting that in Table 317 the parameter n is equal to Nsch, the parameter k is equal to F, and the parameter m is equal to M. The parameter j_i for LDPC is determined as shown in the table below.

Table 333b Parameter 'j_i' for LDPC

j_1 (for 1 transmit antenna or SM with horizontal encoding)	j_2 (for SM with vertical encoding, 2 transmit antennas)	j_3 (for SM with vertical encoding, 3 transmit antennas)	j_4 (for SM with vertical encoding, 4 transmit antennas)	Modulation
24	12	8	6	QPSK
12	6	4	3	16-QAM

8	4	2	2	64-QAM

End text proposal