IEEE P802.11
Wireless LANs

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| 30.6.6.2 Space Time Block Coding (STBC) |
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Abstract

This document proposes specification text for subclause 30.6.6.2 of the spec describing space-time block coding definition for EDMG OFDM PHY, [1].

**30.6.6.2 Space-time block coding**

This subclause defines a Space-Time Block Coding (STBC) for EDMG OFDM PHY. It performs single spatial stream to two space-time streams mapping and includes the following steps for the data subcarriers mapping:

1. The input bits of a single spatial stream is broken into the groups of *NCBPS* bits - , where *q* denotes group number. The STBC applies encoding procedure defined in 30.6.6. The padding procedure requires that the total number of groups of *NCBPS* bits shall be an even number.
2. Each group of bits , *k* = 0, 1, …, *NSD* - 1 is converted to the constellation point , *n* = 0, 1, …, *NSYM* - 1, following the rules defined in 20.5.3.2.4.
3. The modulated data sequence *D*(*iSTS* = 1 , *n*, *k*) for the first space-time stream is defined by inserting zeros from –*NSR* to *NSR* and then inserting data at tones *Md*(*k*) defined in 30.6.1.6 as follows:

,

, *k* = 0, 1, …, *NSD* - 1

1. The modulated data sequence *D*(*iSTS* = 2 , *n*, *k*) for the second space-time stream is defined by inserting zeros from –*NSR* to *NSR* and then inserting data at tones *Md*(*k*) defined in 30.6.1.6 as follows:

,

, *k* = 0, 1, …, *NSD* - 1

1. The modulated pilot sequence *P*(*iSTS* = 1 , *n*, *k*) for the first space-time stream is defined by inserting zeros from –*NSR* to *NSR* and then inserting data at tones *Mp*(*k*) defined in 30.6.1.5 as follows:

,

, *k* = 0, 1, …, *NSP* - 1

1. The modulated pilot sequence *P*(*iSTS* = 2 , *n*, *k*) for the second space-time stream is defined by inserting zeros from –*NSR* to *NSR* and then inserting data at tones *Mp*(*k*) defined in 30.6.1.5 as follows:

,

, *k* = 0, 1, …, *NSP* - 1

where index *n* = 0, 2, …, *NSYM* – 2, pilot sequences *PNSP*(*iSTS* = 1, *k*) and *PNSP*(*iSTS* = 2, *k*) are defined in 30.6.1.5 and *p*(*n*) defines a bit coming from the scrambler defined in 20.5.3.2.2 with shift register x1, x2,…, x7 initialized to all ones for the *n* = 0 OFDM symbol.

For SQPSK and QPSK modulations, STBC shall apply Static Tone Pairing (STP) subcarriers mapping.

**References:**

1. Draft P802.11ay\_D0.3