IEEE P802.11
Wireless LANs

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| EDMG-STF for OFDM in single channel |
| Date: 2017-05-05 |
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Abstract

This document proposes the specification text for subclause 30.6.2 and 30.11 of the spec describing OFDM EDMG-STF and OFDM sequence definition.

**30.6.2 EDMG-STF definition**

**30.6.2.1 General**

The EDMG-STF field has a fixed time duration independent on the particular number of space-time streams. The structure of the EDMG-STF field depends on the number of contiguous 2.16 GHz channels over which an EDMG PPDU is transmitted and the number, *i*STS = 1, 2, …, 8, of space-time streams.

Theand  sequences of length *N* used in the definition of the EDMG-STF field for different space-time streams are defined in section 30.11 (OFDM sequences).

**30.6.2.2 Definition**

For EDMG OFDM transmissions over 2.16 GHz channel, the frequency sequence used to construct the EDMG-STF field for *iSTS*-th space-time stream is shown in Equation (30-1).

 (30-1)

where “*iSTS*” is the space-time stream number and 1 ≤ *iSTS* ≤ 8

The EDMG-STF field transmit waveform in time domain shall be defined at the OFDM sampling rate *Fs* equal to *NCB*\*2.64 GHz and sample time duration *Ts* = 1/*Fs* ns as follows:



where:

*  is 88 for *NCB*=1
*  is the spatial mapping matrix per *k*-th subcarrier
*  is a matrix element from *m*-th row and *n*-th column
*  is a window function applied to smooth the transitions between consecutive OFDM symbols, it’s definition is implementation specific

The fact that only spectral lines of with indices that are a multiple of 4 have nonzero amplitude results in a periodicity of *TDFT*/4=48.48 ns. The interval *TEDMG-STF* is equal to thirty 48.48 ns periods (i.e., 1.455 µs).

**30.11 OFDM sequences**

**30.11.1 EDMG-STF sequence**

**30.11.1.1 General**

The EDMG OFDM PHY uses the pairs of and sequences, *iSTS* = 1, 2, …, 8, of length *N* = 176 to define EDMG-STF field in frequency domain for PPDU transmission over a 2.16 GHz.

**30.11.1.2 Sequences definition**

The sequence pairs and  of length *N* = 176 use {±1, ±j} symbols alphabet and defined in Table 1 – Table 2.

1. The sequence 

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| The Sequence , to be transmitted from left to right, up to down |
| 0 +1 0 0 0 +j 0 0 0 +j 0 0 0 -1 0 0 0 -j 0 0 0 +j 0 0 0 -1 0 0 0 +1 0 0 0 -1 0 0 0 +j 0 0 0 +1 0 0 0 -1 0 0 0 +1 0 0 0 -1 0 0 0 +j 0 0 0 +1 0 0 0 +1 0 0 0 -j 0 0 0 -j 0 0 0 -j 0 0 0 +1 0 0 0 +1 0 0 0 +1 0 0 0 +j 0 0 0 +j 0 0 0 -1 0 0 0 -j 0 0 0 +j 0 0 0 -1 0 0 0 +1 0 0 0 -1 0 0 0 +j 0 0 0 +1 0 0 0 +1 0 0 0 -1 0 0 0 +1 0 0 0 -j 0 0 0 -1 0 0 0 -1 0 0 0 +j 0 0 0 +j 0 0 0 +j 0 0 0 -1 0 0 0 -1 0 0 |
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1. The sequence 

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**References:**

1. Draft P802.11ay\_D0.3