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| 30.9.2.2.7 TRN subfield definition for EDMG OFDM PPDUs |
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Abstract

This document proposes specification text for subclause 30.9.2.2.7 TRN subfield definition for EDMG OFDM PPDUs

30.9.2.2.7 TRN subfield definition for EDMG OFDM PPDUs

For EDMG PPDU transmissions using the EDMG OFDM mode over a 2.16 GHz channel, the OFDM TRN\_BASIC sequence is defined in frequency domain for the *iTXth* transmit chain as follows:

* TRN\_BASICiTX-177, 177 = [SeqiTXleft, 176, 0, 0, 0, SeqiTXright, 176], for *iTX* =1, 2, 3, 4, 5, 6, 7, 8

For EDMG PPDU transmissions using the EDMG OFDM mode over a 4.32 GHz channel, the OFDM TRN\_BASIC sequence is defined in frequency domain for the *iTXth* transmit chain as follows:

* TRN\_BASICiTX-386, 386 = [SeqiTXleft, 385, 0, 0, 0, SeqiTXright, 385], for *iTX* =1, 2, 3, 4, 5, 6, 7, 8

For EDMG PPDU transmissions using the EDMG OFDM mode over a 6.48 GHz channel, the OFDM TRN\_BASIC sequence is defined in frequency domain for the *iTXth* transmit chain as follows:

* TRN\_BASICiTX-596, 596 = [SeqiTXleft, 595, 0, 0, 0, SeqiTXright, 595], for *iTX* =1, 2, 3, 4, 5, 6, 7, 8

For EDMG PPDU transmissions using the EDMG OFDM mode over a 8.64 GHz channel, the OFDM TRN\_BASIC sequence is defined in frequency domain for the *iTXth* transmit chain as follows:

* TRN\_BASICiTX-805, 805 = [SeqiTXleft, 804, 0, 0, 0, SeqiTXright, 804], for *iTX* =1, 2, 3, 4, 5, 6, 7, 8

The basic OFDM TRN subfield waveform for the *iTXth* transmit chain 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:



The normal TRN subfield, short TRN subfield and long TRN subfield are defined as follow:







where:

 is the total number of active tones

 is the TRN mapping matrix (see below)

 is the number of OFDM symbols in a TRN subfield for the given total number of transmit chains *NTX* (see below)

 is a matrix element from mth row and nth column

 is window function applied to smooth the transitions between consecutive OFDM symbols; its definition is implementation specific

 is a time sample index

is the duration of the basic TRN subfield

If the Maximum OFDM MCS subfield in a STA’s EDMG Capabilities element is greater than 0, the STA shall support 2 repetitions of the basic TRN subfield. Other repetitions are optional and support is indicated in the STA’s EDMG Capabilities element.

The OFDM TRN mapping matrix for *NTX* = 1 is defined as follows:



The OFDM TRN mapping matrix for *NTX* = 2 is defined as follows:



The OFDM TRN mapping matrix for *NTX* = 3 is defined as follows:



The OFDM TRN mapping matrix for *NTX* = 4 is defined as follows:



The OFDM TRN mapping matrix for *NTX* = 5, 6 is defined as follows:



The OFDM TRN mapping matrix for *NTX* = 7, 8 is defined as follows:



For 2.16 GHz + 2.16 GHz and 4.32 GHz+ 4.32 GHz PPDU transmission, the OFDM TRN mapping matrix for each channel is determined by the number of transmit chains per channel, which is the half of the total number of transmit chains.

If the number of transmit chains per channel is 1 (*NTX* = 2), the OFDM TRN mapping matrix for each channel is defined as follows:



If the number of transmit chains per channel is 2 (*NTX* = 4), the OFDM TRN mapping matrix for each channel is defined as follows:



If the number of transmit chains per channel is 3 (*NTX* = 6), the OFDM TRN mapping matrix for each channel is defined as follows:



If the number of transmit chains per channel is 4 (*NTX* = 8), the OFDM TRN mapping matrix for each channel is defined as follows:



for the first *NTX* /2 transmit chains shall be correspond to the transmit chain number *iTX* = 1, …, *NTX* /2 and for the second *NTX* /2 transmit chains shall be correspond to the transmit chain number *iTX* = *NTX* /2 +1, …, *NTX*

**References:**

1. Draft P802.11ay\_D1.0