IEEE P802.11
Wireless LANs

|  |
| --- |
| 6.3.3.2 pre-EDMG Modulated Fields Transmissions |
| Date: 2016-12-21 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Artyom Lomayev | Intel | Turgeneva 30, Nizhny Novgorod 603024, Russia | +7 (831) 2969444 | artyom.lomayev@intel.com |
| Carlos Cordeiro | Intel  |  |  | carlos.cordeiro@intel.com |
| Yaroslav Gagiev | Intel  |  |  | yaroslav.p.gagiev@intel.com |
| Alexander Maltsev | Intel  |  |  | alexander.maltsev@intel.com |

Abstract

This document proposes specification text for subcaluse 6.3.3.2 of the SFD describing pre-EDMG modulated fields transmissions, [1].

**6.3.3.2 Pre-EDMG modulated fields transmissions**

**6.3.3.2.1 General**

Pre-EDMG modulated fields include L-STF, L-CEF, L-Header, and EDMG-Header-A. These fields shall be defined at the SC chip rate *Fc* equal to 1.76 GHz and, in case of 4.32 GHz, 6.48 GHz and 8.64 GHz PPDU transmissions, these fields shall be transmitted in the duplicate format. For PPDU transmissions of more than one spatial stream, pre-EDMG waveform include a cyclic shift dependent on the particular stream number.

**6.3.3.2.2 Pre-EDMG SISO transmissions**

For a single stream 2.16 GHz PPDU transmission, the following waveform shall be used to transmit pre-EDMG modulated fields:



where







For all other single stream transmissions, a duplicate format shall be used. The duplicate waveform is obtained by up-sampling and filtering and then appropriate carrier frequency shift. The up-sampling procedure includes an up-sampling by a factor of NCB (NCB = 2, 3, 4) and then filtering by the pulse shaping filter *hSC CB* defined at the NCB\*1.76 GHz sampling rate. The definition of *hSC CB* is out of scope of this standard.

The up-sampled waveform for a 2.16 GHz channel transmission shall be defined as follows:



where

*K* is the length of *hSC CB*,

*Tc* is a SC chip time duration,



The pre-EDMG waveform for a duplicate transmission over a 4.32 GHz channel shall be defined as follows:



where ∆*F* defines a sub-channel spacing equal to 2.16 GHz.

The pre-EDMG waveform for a duplicate transmission over the 6.48 GHz channel shall be defined as follows:



The pre-EDMG waveform for a duplicate transmission over the 8.64 GHz channel shall be defined as follows:



**6.3.3.2.3 Pre-EDMG MIMO transmissions**

The transmission of pre-EDMG modulated fields for PPDUs using more than one stream uses the waveform *rpre-EDMG* defined in sub-clause 6.3.3.2.2. The waveform for *i*-th spatial stream includes a cyclic shift *TiSC* dependent on the particular stream number. The time shift *TiSC* is defined in SC chip units as (*i*-1)x4x*Tc*, where *Tc* is a SC chip time duration.

The pre-EDMG waveform for *i*-th stream transmission over a 2.16 GHz channel shall be defined as follows:



where



The up-sampled waveform for *i*-th spatial stream and a 2.16 GHz channel transmission shall be defined as follows:



where

*K* is the length of *hSC CB*,

*Tc* is a SC chip time duration,



The pre-EDMG waveform for *i*-th spatial stream and duplicate transmission over a 4.32 GHz channel shall be defined as follows:



where ∆*F* defines a sub-channel spacing equal to 2.16 GHz.

The pre-EDMG waveform for *i*-th spatial stream and duplicate transmission over a 6.48 GHz channel shall be defined as follows:



The pre-EDMG waveform for *i*-th spatial stream and duplicate transmission over a 8.64 GHz channel shall be defined as follows:



**References:**

1. 11-15-1358-09-00ay-11ay Spec Framework