IEEE P802.11
Wireless LANs

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| 30.5.8 Non-EDMG Duplicate Transmission |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Artyom Lomayev | Intel | Turgeneva 30, Nizhny Novgorod 603024, Russia | +7 (831) 2969444 | artyom.lomayev@intel.com |
| Alexander Maltsev | Intel  |  |  | alexander.maltsev@intel.com |
| Miki Genossar | Intel |  |  | miki.genossar@intel.com |
| Claudio da Silva | Intel |  |  | claudio.da.silva@intel.com |
| Carlos Cordeiro | Intel  |  |  | carlos.cordeiro@intel.com |

Abstract

This document proposes specification text for subcaluse 30.5.8 of the spec describing non-EDMG duplicate PPDU transmission for SC PHY, [1].

**30.5.8 Non-EDMG duplicate transmission**

**30.5.8.1 General**

Non-EDMG duplicate transmission is used to transmit to Clause 20 STAs that may be present in any 2.16 GHz channel included as part of a EDMG PPDU transmitted over a 4.32 GHz, 6.48 GHz and 8.64 GHz channel. The EDMG-Header-A, EDMG-STF, EDMG-CEF, and EDMG-Header-B are not transmitted. The L-STF, L-CEF, L-Header, data, and possible TRN field transmission shall be as defined in this subcaluse.

**30.5.8.2 Definition**

Non-EDMG PPDU for SC PHY in case of 4.32 GHz, 6.48 GHz and 8.64 GHz bandwidth shall be transmitted in a non-EDMG duplicate mode. For SC PPDU transmission of more than one transmit chain, non-EDMG duplicate waveform includes a cyclic shift dependent on the particular transmit chain number.

Non-EDMG PPDU waveform shall be defined at the SC chip rate *Fc* equal to 1.76 GHz and include the following modulated fields:



where









The TRN field can be present for 2.16 GHz channel transmission and shall not be present for 4.32 GHz, 6.48 GHz, and 8.64 GHz bandwidth transmission.

The non-EDMG PPDU waveform for *iTX*-th transmit chain includes a cyclic shift *TiTXSC* dependent on the particular transmit chain number. The time shift *TiTXSC* is defined in SC chip units as (*i*-1)x*Nc*x*Tc*, where *Nc* = 4 and *Tc* is a SC chip time duration.

The non-EDMG PPDU waveform for *iTX*-th chain transmission over a 2.16 GHz channel shall be defined as follows:



where



The non-EDMG duplicate waveform is obtained by up-sampling and filtering and then appropriate carrier frequency shift of the *riTXnon-EDMG* waveform. 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 non-EDMG PPDU waveform for *iTX*-th transmit chain and 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 time delays are defined as follows:

* ∆*t1* = 0 and ∆*t2* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* = 0
* where zero delay shall correspond to the primary channel

The non-EDMG PPDU waveform for *iTX*-th transmit chain and a duplicate transmission over the 6.48 GHz channel shall be defined as follows:



The time delays are defined as follows:

* ∆*t1* = 0 and ∆*t2* in the range [0, *Tc*] and ∆*t3* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* = 0 and ∆*t3* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* in the range [0, *Tc*] and ∆*t3* = 0
* where zero delay shall correspond to the primary channel

The non-EDMG PPDU waveform for *iTX*-th transmit chain and a duplicate transmission over the 8.64 GHz channel shall be defined as follows:



The time delays are defined as follows:

* ∆*t1* = 0 and ∆*t2* in the range [0, *Tc*] and ∆*t3* in the range [0, *Tc*] and ∆*t4* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* = 0 and ∆*t3* in the range [0, *Tc*] and ∆*t4* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* in the range [0, *Tc*] and ∆*t3* = 0 and ∆*t4* in the range [0, *Tc*] or ∆*t1* in the range [0, *Tc*] and ∆*t2* in the range [0, *Tc*] and ∆*t3* in the range [0, *Tc*] and ∆*t4* = 0
* where zero delay shall correspond to the primary channel

**References:**

1. Draft P802.11ay\_D0.3