IEEE P802.11
Wireless LANs

|  |
| --- |
| Spec Text update on Recommended MC-OOK Symbols |
| Date: 2018-09-09 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Miguel Lopez | Ericsson |  |  | miguel.m.lopez@ericsson.com  |
| Dennis Sundman | Ericsson |  |  | dennis.sundman@ericsson.com  |
| Leif Wilhelmsson | Ericsson |  |  | leif.r.wilhelmsson@ericsson.com  |
| Steve Shellhammer | Qualcomm |  |  | shellhammer@ieee.org  |
| Eunsung Park | LG Electronics |  |  | esung.park@lge.com  |
| Minyoung Park | Intel Corp. |  |  | minyoung.park@intel.com  |
| Shahrnaz Azizi | Intel Corp. |  |  | shahrnaz.azizi@intel.com  |
| Vinod Kristem | Intel Corp. |  |  | vinod.kristem@intel.com  |

Abstract

In Draft P802.11baD0.4, we added the Annex AB with examples of WUR MC-OOK symbols. This document contains an update to Annex AB with short descriptions of the example WUR MC-OOK symbols.

**Discussion**

Draft 0.4 includes an Annex AB with example MC-OOK On symbols. It is desirable to provide a short description of the properties of these symbols.

This document provides updated spec text for the example MC-OOK On Symbols described in Annex AB in Draft 0.4.

**Straw Poll**

Do you support the addition of Spec Text as marked in **Red** in this document IEEE 802.11-18/1528r1?

**Yes:** 15

**No:** 0

**Abstain:** 5

**Motion**

Move to incorporate the specification text changes as marked in **Red** in this document, IEEE 802.11-18/1528r3, into the next version of the TGba draft.

**Move:** Dennis Sundman

**Second:** Miguel Lopez

**Yes:**

**No:**

**Abstain:**

**Instructions to 802.11ba Editor**

**Editor Instructions: In Annex AB add the text and tables shown in Red.**

*

**Examples of WUR MC-OOK Symbol Design and CSD Design**

Subclauses 32.2.3.1 (WUR-PPDU waveform generation for Sync field and high rate Data field), 32.2.3.2 (WUR-PPDU waveform generation for low rate Data field), and 32.2.3.3 (WUR-PPDU Data field waveform generation for the FDMA transmission) provides a description of how the MC-OOK 2 µs and 4 µs On and Off symbols can be constructed but does not provide the actual frequency domain sequences for those symbols. This annex provides example sequences for the construction of these symbols. Table AB-1 (Example Values for the Sequence S-6,6 used for the Construction of the 2 µs MC-OOK On symbol) provides example sequences for the construction of the 2 µs MC-OOK On symbol.

Example 1 in Table AB-1 has been evaluated under a number of channel conditions and has shown consistent good performance in both multipath fading and additive white Gaussian noise channels. This sequence also has the lowest PAPR among the BPSK MC-OOK On symbols for a single channel transmission.

Example 2 in Table AB-1 has been designed to provide good performance in commonly found propagation conditions, including the additive white Gaussian noise channel. This MC-OOK On symbol has nearly constant envelope and power distributed over the full bandwidth. Therefore, it can be transmitted with an output power higher than during the legacy preamble.

Example 3 in Table AB-1 has been found to provide good performance through exhaustive search among the OFDM symbols with BPSK modulation. This sequence is optimized for good tradeoff between multipath fading channel performance and PAPR.

|  |
| --- |
| * Example Values for the Sequence *S-6,6* used for the Construction of the 2 µs MC-OOK On symbol
 |
|  | Sequence *S-6,6*  |
| Example 1 |  |
| Example 2 |  |
| Example 3 |  |

Table AB-2 (Example Values for the Sequence S-6,6 used for the Construction of the 4 µs MC-OOK On symbol) provides example sequences for the construction of the 4 µs MC-OOK On symbol.

Example 1 in Table AB-2 has been evaluated under a number of channel conditions and has shown consistent good performance in both multipath fading and additive white Gaussian noise channels. This sequence also has the lowest PAPR among the BPSK MC-OOK On symbols for a single channel transmission.

Example 2 in Table AB-2 has been designed to provide good performance in commonly found propagation conditions, including the additive white Gaussian noise channel. This MC-OOK On symbol has nearly constant envelope and power distributed over the full bandwidth. Therefore, it can be transmitted with an output power higher than during the legacy preamble.

Example 3 in Table AB-2 has been found to provide good performance through exhaustive search among the OFDM symbols with BPSK modulation. This sequence is optimized for good tradeoff between multipath fading channel performance and PAPR.

|  |
| --- |
| * Example Values for the Sequence *S-6,6* used for the Construction of the 4 µs MC-OOK On symbol
 |
|  | Sequence *S-6,6* |
| Example 1 |  |
| Example 2 |  |
| Example 3 |  |