IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| 0.8us GI with 4x HE-LTF | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Jianhan Liu | Mediatek |  |  | jianhan.liu@mediatek.com |
| Tianyu Wu |  |  |  |
| Hongyuan Zhang | Marvell |  |  |  |
| Rui Cao |  |  |  |
| Qinghua Li | Intel |  |  |  |
| Xiaogang Chen |  |  |  |
| Feng Jiang |  |  |  |
| Ross Yu | Huawei |  |  |  |
| David Yang |  |  |  |
| Ron Porat | Broadcom |  |  |  |
| Lochan Verma | Qualcomm |  |  |  |
| Sungeun Lee | Cypress |  |  |  |

Abstract

This submission proposes 4x HE-LTF and 0.8us GI as an optional mode.

Discussion:

Not matter what phase alignment or interpolation methods are applied at TX, in beamforming scenarios, at receiver side, some channels can not do smoothing or interpolation without channel estimation loss. In Wi-Fi systems, the successful reception relies on channel estimation accurancy at RX.

Beamforming is most useful mode for 11n/ac/ax. In beamforming scenarios, to make sure the channel estimation accurancy, 4x HE-LTF becomes a guarantee. However, 4x HE-LTF can only used with 3.2us GI for the whole payload in current 11ax draft 0.5. For most usage scenarios, especially MIMO or MU-MIMO, channel delay spreads should be short than 0.8us. Compared to 0.8us, 3.2us reduce the data rate by about 17%.

To enhance the efficiency in these scenarios, 0.8us GI+4x HE-LTF is proposed in this document as an optional mode.

**9.4.2.218.3 HE PHY Capabilities Information field**

11ax editor:

Please make the following changes in “Figure 9-589cl—HE PHY Capabilities Information field format” in page 65:

Add 1-bit “4x HE-LTF and 0.8 us GI Support” at the end of the HE PHY capabilities fields and before the HE PHY Capabilities Reserved fields.

11ax editor:

Please add the following entry to “Table 9-262aa—Subfields of the HE PHY Capabilities Information field” in page 70, after line 28:

|  |  |  |
| --- | --- | --- |
| 4x HE-LTF and 0.8 us GI Support For HE PPDUs | B66: Indicates support of reception of 4x LTF and 0.8 us guard interval duration for HE SU PPDUs. | Set to 1 if supported by the STA.  Set to 0 otherwise |

**26.3.10.7.2 Content**

11ax editor:

Please replace line 26-32, page 218, in “Table 26-16—HE-SIG-A field of an HE SU PPDU and HE extended range SU PPDU” with the following text:

|  |  |  |  |
| --- | --- | --- | --- |
| B21-B22 | GI+LTF Size(#1420) | 2 | Indicates the GI duration (#1420) and HE-LTF size.  Set to 0 to indicate a 1x HE-LTF and 0.8 μs GI  Set to 1 to indicate a 2x HE-LTF and 0.8 μs GI  Set to 2 to indicate a 2x HE-LTF and 1.6 μs GI  Set to 3 to indicate a 4x HE-LTF and 0.8 μs GI when both B7 (DCM) in HE-SIGA1 and B9 (STBC) in HE-SIGA2 are set to 1. Neither DCM nor STBC shall be applied when both B7 (DCM) in HE-SIGA1 and B9 (STBC) in HE-SIGA2 are set to 1.  Set to 3 to indicate a 4x HE-LTF and 3.2 μs GI otherwise.  (#2005) |

11ax editor:

Please replace line 14-20, in page 221, in “Table 26-17—HE-SIG-A field of an HE MU PPDU” with the following text:

|  |  |  |  |
| --- | --- | --- | --- |
| B23-B24 | GI+LTF Size(#1420) | 2 | Indicates the GI duration (#1420) and HE-LTF size.  Set to 0 to indicate a 4x HE-LTF and 0.8 μs GI  Set to 1 to indicate a 2x HE-LTF and 0.8 μs GI  Set to 2 to indicate a 2x HE-LTF and 1.6 μs GI  Set to 3 to indicate a 4x HE-LTF and 3.2 μs GI(#2005) |