### **IEEE P802.11 Wireless LANs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolutions on Several PHY Topics | | | | |
| Date: 2021-04-29 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Steve Shellhammer | Qualcomm |  |  | shellhammer@ieee.org |
| Bin Tian | Qualcomm |  |  | btian@qti.qualcomm.com |

**Abstract**

The document provides comment resolutions for CIDs: 5090, 5413, 5414, 5415, 5416 and 5417.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 5413 | 27.3.18c.1 | 228 | The justification for sixty-four LTF sequence in an NDP is only valid for a single user case. For multi-user cases, the justification no longer holds. In practice, there is no reason to justify the choice of sixty-four secure LTF sequences in the standard | Remove ", since there are up to eight repetitions  13 and up to eight secure LTF sequences within a repetition" | **Revised**  There is a typo in the Proposed Change.  On Page 228, Line 12, Delete “, since there are up to eight repetitions and up to eight secure LTF sequences within a repetition” |
| 5414 | 27.3.18c.2 | 229 | The justification for sixty-four LTF sequence in an NDP is only valid for a single user case. For multi-user cases, the justification no longer holds. In practice, there is no reason to justify the choice of sixty-four secure LTF sequences in the standard | Remove ", since there are up to eight repetitions  13 and up to eight secure LTF sequences within a repetition" | **Revised**  There is a typo in the Proposed Change.  On Page 229, Line 11, Delete “, since there are up to eight repetitions and up to eight secure LTF sequences within a repetition” |
| 5415 | 27.3.18c.3 | 230 | The justification for sixty-four LTF sequence in an NDP is only valid for a single user case. For multi-user cases, the justification no longer holds. In practice, there is no reason to justify the choice of sixty-four secure LTF sequences in the standard | Remove ", since there are up to eight repetitions  13 and up to eight secure LTF sequences within a repetition" | **Revised**  There is a typo in the Proposed Change.  On Page 230, Line 15, Delete “, since there are up to eight repetitions and up to eight secure LTF sequences within a repetition” |
| 5416 | 27.3.18c.4 | 232 | The justification for sixty-four LTF sequence in an NDP is only valid for a single user case. For multi-user cases, the justification no longer holds. In practice, there is no reason to justify the choice of sixty-four secure LTF sequences in the standard | Remove ", since there are up to eight repetitions  13 and up to eight secure LTF sequences within a repetition" | **Revised**  There is a typo in the Proposed Change.  On Page 232, Line 5, Delete “, since there are up to eight repetitions and up to eight secure LTF sequences within a repetition” |
| 5417 | 27.3.18e | 235/8 | The text "The first six pseudo random octets are used in the construction of the pseudo random phase rotations" is incorrect. Actually, the first seven pseudo random octets are used to construct the pseudo random phase rotations | Change "first six" to "first seven" | **Accepted** |
| 5090 | 11.21.6.4.6  27.3.18a |  | Need to specify STF signal characteristic in the PHY normative sections to include the following constraints:  >STA with the largest Nsts sent first in the NDP that's destined to more than 1 STA  >Apply per stream CSD  >NTX shall be equal to Nsts hence no per chain CSD | As per comment | **Revised**  TGaz Editor make edits in document 802.11-21/536r0 |

**Discussion (CID 5090)**

* Note, that in D3.0, Page 224, Line 27 the draft states: “When the TXVECTOR parameter NUM\_USER is more than 1, the TXVECTOR parameter NUM\_STS[1] is used to encode the NSTS And Mid-amble Periodicity field of the HE-SIG-A1. Otherwise, the TXVECTOR parameter NUM\_STS is used to encode the NSTS And Mid-amble Periodicity field of the HE-SIG-A1”
* To ensure the correct value of NUM\_STS, it is important to have the first STA Info Field in the NDPA be addressed to a STA with the maximum value of NSTS.
* We agree that that per-stream CSD is applied to the HE-STF same as in 802.11ax and that per-chain CSD is not applied. In fact, in 802.11ax, per-stream CSD is covered in 27.3.11.2.2 Cyclic shift for HE modulated field and per chain CSD is covered in 27.3.11.2.1 Cyclic shift for pre-HE modulated field. Considering that HE-STF is in the HE modulated fields, it is clear that for the HE-modulated fields, which includes HE-STF, per-stream CSD is applied. The equation in HE-STF (27.3.11.9) also clearly indicate which CSD is applied.
* There is already text in the draft, 27.3.18a on the NTX relative to NSTS. To clarify that this also applies to HE-STF we recommend adding “HE-STF” at the appropriate location in the draft.

**Instructions to the Editor**

TGaz Editor Please make the following edits to the Draft 3.0

In 9.3.1.19 (VHT/HE NDP Announcement frame format), on Page 43, right after “In the case of the TB Ranging measurement exchange, see 11.22.6.4.3 (TB Ranging measurement exchange), the RA field is set to the broadcast address if more than one STA is intended to receive this frame; otherwise the RA field is set to the address of the STA that is intended to receive this frame.” Please add the following,

In a TB Ranging measurement exchange where more than one STA is intended to receive this frame, the first STA Info field is assigned to the STA with the largest NSTS. If more than one STA has an NSTS value equal to the largest NSTS then the Info field will be assigned to one of the STAs with the largest NSTS.

In 27.3.18a HE Ranging NDP, right before the sentence “— Can use insecure HE-LTFs or Secure HE-LTFs” please add the following,

* HE-STF in HE Ranging NDP is the same as the HE-STF in a SU PPDU

In 27.3.18b HE TB Ranging NDP, right before the sentence “— Can use insecure HE-LTFs or Secure HE-LTFs” please add the following,

* HE-STF in HE TB Ranging NDP is the same as the HE-STF in a HE TB PPDU

On Page 224, Line 13, please add the text shown in Red,

No beamforming steering matrix is applied to the waveform, the Beamformed field in HE-SIG-A of a Ranging NDP is always set to 0. For transmission of HE-STFs and HE-LTFs, if NSTS = NTx, Q matrix shall be an Identity matrix, and if NSTS < NTx, Q matrix shall be based on antenna selection matrix with no antenna swapping. Q matrix becomes an Identity matrix when all 0 rows are removed.