IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolutions on CID 11 | | | | |
| Date: 2017-11-8 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Takenori Sakamoto | Panasonic | 600 Saedo-cho, Tsuzuki-ku, Yokohama 224-8539, Japan |  | [sakamoto.takenori@jp.panasonic.com](mailto:sakamoto.takenori@jp.panasonic.com) |
| Hiroyuki Motozuka | Panasonic |  |  | [motozuka.hiroyuki@jp.panasonic.com](mailto:motozuka.hiroyuki@jp.panasonic.com) |
| Thomas Handte | Sony Europe Ltd. |  |  | [thomas.handte@sony.com](mailto:thomas.handte@sony.com) |
| Artyom Lomayev | Intel |  |  | [artyom.lomayev@intel.com](mailto:artyom.lomayev@intel.com) |

Abstract

This submission proposes resolutions of CID 11 received from TGay comment collection (TGay Draft 0.3).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CID | Clause | Page | Comment | Prposed change |
| 11 | 30.3.3.2.6 | 107 | Specify/clarify L-Header spoofing duration requirements for A-PPDUs. The L-Header spoofing duration for EDMG PPDUs described in section 30.3.3.2.6 seem to be specified w.r.t a single PPDU. There is an inherent challenge in determining the L-Header spoofing duration for an A-PPDU | Clarify whether the text in this section w.r.t L-Header spoofing duration applies only to a single PPDU. And also clarify what the requirements are for A-PPDUs |

**Proposed resolution:** Revised.

**Discussion:** The issue of spoofing of EDMG A-PPDU is that the duration of an EDMG A-PPDU may be unknown at a point in time of transmission. Thus, spoofing duration can’t be set.

Solution proposed here is:

For an EDMG A-PPDU, the spoofing duration shall be set to a value less than or equal to aPPDUMaxTime (2ms). The EDMG A-PPDU shall not exceed this value. In case the actual A-PPDU duration is shorter than the value indicated by spoofing, padding shall be done such that spoofing error requirements are fulfilled.

30.3.3.2.4 L-Header definition

30.3.3.2.4.1 General

*Add the9th and 10th bullets as follows [1]:*

For the EDMG PHY, spoofing error is defined as the difference between the PPDU duration calculated based on L-Header and the actual PPDU duration.

The structure of the L-Header field is defined as follows:

* For a control mode PPDU, the L-Header field is the same as the DMG control mode header field (see Table 20-11) and the reserved bits 22 and 23 shall be both set to 1. In this case:
* The combination of the Scrambler Initialization field and the Turnaround field in the L-12 Header is interpreted as shown in Table 28; and
* If the control mode PPDU is an EDMG control mode PPDU, the Length field shall be set so that the spoofing error is non-negative and less than or equal to 150 ns, except for PPDU durations between 347.56 µs and 347.93 µs and between 349.10 µs and 350.76 µs where the maximum spoofing error shall be 0.37 µs and 1.66 µs, respectively.
* For an EDMG SC mode PPDU ~~or~~and an EDMG OFDM mode PPDU, the L-Header field is the same as the DMG SC mode PHY header (see Table 20-17) with the following changes:
* The reserved bit 46 shall be set to 1 to indicate the presence of the EDMG-Header-A field. This implies that the PPDU is an EDMG PPDU; and
* The Last RSSI field shall be redefined as shown inTable 19; and
* The 5 LSBs of the Length field shall be redefined as shown in Table 20. Moreover, the remaining bits of the Length field shall be set so that the spoofing error is smaller than one symbol block (512×Tc) and non-negative; and
* The Additional PPDU field and the Beam Tracking Request field shall both be set to zero.
* For an EDMG SC mode A-PPDU and an EDMG OFDM mode A-PPDU, the definition of the L-Header field is the same as for the EDMG SC mode PPDU and the EDMG OFDM mode PPDU as shown above with the following change:
* If the actual A-PPDU duration is unknown at the point in time of L-Header transmission, the remaning bits of the Length field shall be set such that the PPDU duration calculated based on the L-Header shall be within the range of the actual PPDU duration of the 1st PPDU in the A-PPDU to the smaller value of aPPDUMaxTime (2ms) and remaining TXOP duration, and padding shall be applied such that the spoofing error requirements are fulfilled. The padding for EDMG SC mode A-PPDU is defined in 30.5.9.4.3. The padding for EDMG OFDM mode A-PPDU is defined in 30.6.7.3.3.

30.5.9 Data field

30.5.9.3 Scrambler

30.5.9.3.1 Data scrambler

*Add the 3rd subclause as follows [1]:*

The operation of the scrambler applied for the data bits is defined in 20.3.9. The scrambling of the PSDU of an SU PPDU continues the scrambling of the L-Header and the EDMG-Header-A fields. The initial seed value is defined in the L-Header field.

The scrambling of the PSDU of an MU PPDU is performed on a per user basis and continues the scrambling of the EDMG-Header-B field with reset of the seed value. The initial seed value is defined in the EDMG-Header-B field on a per user basis.

For EDMG A-PPDU, the initial seed value is defined in the L-Header field, the scrambling of the *iPPDU*th PPDU continues the scrambling of (*iPPDU* - 1)th PPDU with no seed reset.

30.5.~~8~~9.4 Encoding

30.5.~~8~~9.4.1 General

*Add NBLKSspoof in Table 54 in [2] as follows:*

Table 54 —Frequently used parameters

|  |  |
| --- | --- |
| **Symbol** | **Explanation** |
|  | Spatial stream number |
|  | Total number of spatial streams for *iuser*-th user |
|  | User number |
|  | Total number of users in a multi user transmission |
|  | Space-time stream number for *iuser*-th user |
|  | Total number of space-time streams for *iuser*-th user |
|  | Space-time stream number over all users |
|  | Total number of space-time streams over all users |
|  | PSDU length in octets for *iuser*-th user |
|  | LDPC codeword length in bits, it can be equal to 468, 504, 624, 672, 936, 1008, 1248, and 1344 |
|  | LDPC codeword length in bits for *iuser*th user |
|  | Number of systematic data bits per LDPC codeword |
|  | Number of parity bits per LDPC codeword |
|  | Repetition factor for *iuser*th user; is equal to 2 for MCS 1 and equal to 1 for all other MCSs |
|  | LDPC code rate for *iuser*th user and ; can be equal to ½, 5/8, 2/3, ¾, 13/16, 5/6, 7/8 |
|  | Total number of LDPC codewords for *iuser*th user |
|  | Number of pad bits for the *iuser*th user to reach an integer number of LDPC codewords |
|  | Total number of SC symbol blocks for the *iuser*th user |
|  | Minimum number of total SC symbol blocks for BRP PPDU transmission |
|  | Number of pad bits for the *iuser*th user to reach an integer number of SC symbol blocks |
|  | Number of contiguous 2.16 GHz channels used for PPDU transmission |
|  | Number of coded bits per SC symbol block; depends on modulation type and is different for different GI types as defined in Table 55. |
|  | Number of coded bits per symbol (constellation point) for the *iuser*th user and *iSS*th spatial stream |
|  | Number of symbols (constellation points) per SC symbol block; depends on the GI type as defined in Table 56. |
|  | Maximum number of SC symbol blocks over all users |
|  | The number of pad SC symbol blocks for the *iuser*th user that is required to align PPDUs over different users in time |
|  | Number of SC symbol blocks for the last PPDU in an A-PPDU to reach the spoofing A-PPDU duration |

*Editor: modifications are introduced in respect to [2]*

30.5.~~8~~9.4.3 LDPC encoding

*Editor: add a formula as follows:*







*Editor: introduce modifications as below*

NOTE— For BRP PPDU the  is defined on a per user basis in the Requested BRP SC Blocks field within a responder’s EDMG Capabilities element. If the Requested BRP SC Blocks field is not included in the EDMG Capabilities element, then  = aBRPminSCblocks.

NOTE— For last PPDU in A-PPDU, the  is computed to keep the spoofing error non-negative and smaller than one SC symbol block (512×Tc). Spoofing error is defined as the difference between the PPDU duration calculated based on the L-Header and the actual A-PPDU duration. If the last PPDU in A-PPDU is also BRP PPDU, the  shall be equal to or greater than .

30.6.7.3 Encoding

30.6.7.3.1 General

*Add NSYMSspoof iin Table 2 in [2] as follows:*

Table 2 —Frequently used parameters

|  |  |
| --- | --- |
| **Symbol** | **Explanation** |
|  | Spatial stream number |
|  | Total number of spatial streams for *iuser*-th user |
|  | User number |
|  | Total number of users |
|  | Space-time stream number for *iuser*-th user |
|  | Total number of space-time streams for *iuser*-th user |
|  | Space-time stream number over all users |
|  | Total number of space-time streams over all users |
|  | PSDU length in octets for *iuser*-th user |
|  | LDPC codeword length in bits, it can be equal to 624, 672, 1248, and 1344 |
|  | LDPC codeword length for *iuser*-th |
|  | Number of systematic data bits per LDPC codeword |
|  | Number of parity bits per LDPC codeword |
|  | LDPC code rate for *iuser*-th user, it can be equal to ½, 5/8, ¾, 13/16, 7/8 |
|  | Total number of LDPC codewords for *iuser*-th user |
|  | Number of pad bits for *iuser*-th user to get integer number of LDPC codewords |
|  | Total number of OFDM symbols for *iuser*-th user |
|  | Minimum number of total OFDM symbols for BRP PPDU transmission |
|  | Number of pad bits for *iuser*-th user to get integer number of OFDM symbols |
|  | Number of coded bits per OFDM symbol |
|  | Number of coded bits per constellation point for *iuser*-th user and *iSS*-th spatial stream |
|  | Maximum number of OFDM symbols over all users |
|  | The number of pad OFDM symbols for *iuser*-th user required to align PPDUs over different users in time |
|  | Number of OFDM symbols for the last PPDU in an A-PPDU to reach the spoofing A-PPDU duration |

30.6.7.3.2 Parity check matrices

*Editor: modifications are introduced in respect to [2]*

30.6.7.3.3 LDPC encoding

*Editor: add a formula as follows:*







*Editor: introduce modifications as below*

NOTE – For BRP PPDU ~~T~~the  is defined per user basis as  = aBRPminOFDMblocks.

NOTE – For last PPDU in A-PPDU, the  is computed to keep the spoofing error non-negative and smaller than one SC symbol block (512×Tc). Spoofing error is defined as the difference between the PPDU duration calculated based on the L-Header and the actual A-PPDU duration. If the last PPDU in A-PPDU is also BRP PPDU, the  shall be equal to or greater than .

**References:**

1. Draft P802.11ay\_D0.8

**Straw Poll/Motion:**

* Do you agree to accept resolutions to CID 11 proposed in doc 11-17/1676r0?