IEEE P802.11
Wireless LANs

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| Comment Resolutions on EDMG A-PPDU |
| Date: 2017-9-14 |
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Abstract

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

* 3 CIDs: 9, 253, 378

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| --- | --- | --- | --- | --- |
| CID | Clause | Page | Comment | Prposed change |
| 9 | 30.3.2.2 | 100 | A-PPDU structures are missing detailed specification that can result in potential ambiguity in interpreting the standard | Add A-PPDU structure details including the GIs, headers, etc like is provides for the single PPDU case in section 30.5.6.2.2 |

**Discussion:** A-PPDU structures have been added in D0.5. However suffixes *j* and *N* are obsolete and conflict with those in 30.3.2.2.

**Proposed resolution:** Revised

30.5.8.2.1 General

This subclause defines the symbol blocking and guard interval structure for each type of EDMG SC mode PPDU. The GIs used to define symbol blocking structure for the pre-EDMG fields, EDMG-Header-B and Data field are defined in30.5.8.1.

The symbol notations for frequently used parameters in this subclause are summarized in Table 52.

*Modify Table 52 as follows:*

Table 52 —Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Space-time stream number |
|  | Total number of space-time streams |
|  | User number |
|  | Total number of users |
|  | Space-time stream number for *iuser*th user |
|  | Total number of space-time streams for *iuser*th user |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | Number of contiguous 2.16 GHz channels used for the PPDU transmission, 1 ≤ *NCB* ≤ 4 |
| *iPPDU* | PPDU index number aggregated into the A-PPDU, ~~0~~1 ≤ *~~j~~iPPDU* ≤ *~~N~~NPPDU* |
| *NPPDU* | Total number of PPDUs aggregated into a single A-PPDU |

The SU PPDU symbol blocking and guard interval structure shall be as defined in 30.5.~~7~~8.2.2. The SU A-PPDU symbol blocking and guard interval structure shall be as defined in 30.5.~~7~~8.2.3.

The MU PPDU symbol blocking and guard interval structure shall be as defined in 30.5.~~7~~8.2.4.

*Modify 30.5.8.2.3 as follows:*

30.5.8.2.3 SU A-PPDU transmission

The SU PPDU structures for EDMG A-PPDU transmission described in this subclause cover all the combination of channel bandwidth and number of spatial streams.

The SU PPDU structures for the first EDMG PPDU (i.e., *~~j~~iPPDU* = ~~0~~1) within the EDMG A-PPDU are as shown in Figure 83 through Figure 89. The SU PPDU structure for the EDMG PPDUs (i.e., ~~1~~2 ≤ *~~j~~iPPDU* ≤ *~~N~~NPPDU*) following the first EDMG PPDU (i.e., ~~1 ≤~~ *~~j~~* ~~≤ N~~*iPPDU* = 1) when using the short GI, normal GI and long GI shall be as shown in 0, 0, and 0, respectively. The final block transmitted of each EDMG PPDU within the EDMG A-PPDU is followed by the same GI as the Data field regardless of the value of the Additional EDMG PPDU field within the EDMG-Header-A.



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Figure 90 —SU PPDU structure: EDMG A-PPDU, ~~1~~2 ≤ *~~j~~iPPDU* ≤ *~~N~~NPPDU*, short GI



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Figure 91 —SU PPDU structure: EDMG A-PPDU, ~~1~~2 ≤ *~~j~~iPPDU* ≤ *~~N~~NPPDU*, normal GI



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Figure 92 —SU PPDU structure: EDMG A-PPDU, ~~1~~2 ≤ *~~j~~iPPDU* ≤ *~~N~~NPPDU*, long GI

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| --- | --- | --- | --- | --- |
| CID | Clause | Page | Comment | Prposed change |
| 253 | 1013.2 | 48 | The EDMG STA also needs to indicate the max A-PPDU length exponent in DMG Capabilities element for legacy STAs. | Replace "An" with "In addition, an" |

**Discussion:** This comment (CID 253) is resolved with resolution for CID 328.

**Proposed resolution:** Reject.

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| --- | --- | --- | --- | --- |
| CID | Clause | Page | Comment | Prposed change |
| 378 | 30.3.3.3.2.4 | 116 | When N\_CB>1, CEF is only available for precoded spatial streams. For A-PPDU in SC mode, it is not clear in which spatial stream header-Ai is sent. .It is also not clear which subclause of 30.5.6.2 is applicable to insert the GI before/after header-Ai | Identical header-Ai (excluding GI) is sent on all spatial streams, and the number of spatial streams is not changed through the A-PPDUThe GI in front of part A and in between part A&B is the same as the GI in front of header-B,The GI follows part B is the same as the GI appended to header-B for GI continuationIf GI length is normal, the GI appended to the data block in front of the GI prepended to part A, is skipped |

**Proposed resolution:** Revised

* + - * 1. EDMG-Header-A definition

Definition for EDMG SC mode and EDMG OFDM mode PPDUs

The EDMG-Header-A field has a fixed size of two DMG SC symbols (see clause 20) comprising of 112 data bits followed by a 16 bit CRC.

Two types of EDMG-Header-A structures are defined, namely, one for EDMG SU PPDU and one for EDMG MU PPDU. The type of EDMG-Header-A structure used in an EDMG PPDU is indicated by the value of the SU/MU Format field.

In case of an EDMG MU PPDU, the EDMG-Header-A structure is further subdivided into two subtypes, namely, FDMA and non-FDMA. The subtype used is indicated by the value of the FDMA Format field. In an EDMG MU PPDU of FDMA subtype, no more than one STA is assigned to a particular channel.

The structure of the EDMG-Header-A field for an EDMG SU PPDU is shown in Table 24. The structure of the EDMG-Header-A field for an EDMG MU PPDU of non-FDMA subtype is shown in Table 27. The structure of the EDMG-Header-A field for an EDMG MU PPDU of FDMA subtype is shown in Table 29.

The total number of MCS subfields in the EDMG-Header-A field shall be constant whether or not channel aggregation is used. Therefore, if channel aggregation is used, the number of MCSs assigned to each channel in the aggregate shall be N/2, where N is the total number of MCS subfields. Specifically, the first N/2 MCSs shall be assigned to the spatial streams of the primary channel and the second N/2 MCSs shall be assigned to the spatial streams of the secondary channel.

In case of multiple stream transmission, each spatial stream has an identical bandwidth configuration as defined in the EDMG-Header-A.

For 2.16+2.16 GHz and 4.32+4.32 GHz PPDU transmission, the number of spatial streams, *NSS*, shall be an even number. The first *NSS*/2 spatial streams shall be transmitted in the primary channel and the second *NSS*/2 spatial streams shall be transmitted in the secondary channel.

*Add the following paragraph after the 7th paragraph:*

In case of an EDMG A-PPDU, SU/MU Format field shall be set to 0. PSDU Length, EDMG-MCS, and Additional EDMG PPDU fields can be changed over the EDMG A-PPDU. All other fields shall have the same value as in the EDMG-Header-A of preceding EDMG PPDU. The TRN field is appended only once at the end of the EDMG A-PPDU.

**References:**

1. Draft P802.11ay\_D0.5
2. 11-17/0761r4

**Straw Poll/Motion:**

* Do you agree to accept resolutions to CID 9, 253, and 378 in doc 11-17/1411r0?