### IEEE P802.11Wireless LANs

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| 11ax D4.0 MAC Comment Resolution for HE Beacon |
| Date: 2019-03-10 |
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Abstract

This submission proposes resolutions for comments of TGax Draft D4.0 with the following CIDs:

21163, 21571, 21296, 21292, 21293, 21508

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revise resolution based on offline discussion. The major change is marked with green.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax D4.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D4.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 21163 | Po-Kai Huang | 424.47 | 26.15.6 | The following sentences "The AP shall set all other TXVECTOR parameters to values that are mandatory in receptionfor HE non-AP STAs." may need some clarification. Specifically, other parameters include format, which is already HE SU PPDU and not relevant. It will be better if we can clarify as many parameters as possible either through a description or a note to enhance the understanding. | As in comment. | Revised – Agree in principle with the commenter. We clarify all the necessary settings for HE Beacon carried in HE SU PPDU.TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21163 |
| 21571 | Youhan Kim | 424.46 | 26.15.6 | GI\_TYPE cannot be any value. For example, 4xHE-LTF does not support 1.6 usec GI. | Clarify that only valid (and probably only mandatory) GI\_TYPEs can be used. | Revised – Agree in principle with the commenter. We clarify the allowed setting for GI\_TYPEs.TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21571 |
| 21296 | Robert Stacey | 424.46 | 26.15.6 | "shall set ... GI\_TYPE to any value" is unnecessary | Delete "GI\_TYPE to any value, " | Revised – Agree in principle with the commenter. We clarify the allowed setting for GI\_TYPEs.TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21296 |
| 21292 | Robert Stacey | 424.20 | 26.15.5 | The HE Operation element contains the current opreating parameters for the BSS and these can change over time. Rewrite the requirement so that it references the current BSS operating paramters and not just those in effect when the BSS is started. The Basic HE-MCS And NSS Set field is always present so there is no need for a fallback to a mandatory HE-MCS. Beacon frames are always broadcast and hence "group addressed frames". DCM is not part of the basic set and should not be used. | Rewrite as "An AP that transmits a group addressed frame in an HE ER SU PPDU shall use an <HE-MCS, 1> tuple that supported by all STAs in the BSS as indicated in the Basic HE-MCS And NSS set field in the last transmitted HE Operation element. An AP shall not transmit a group addressed frame in an HE ER SU PPDU with the TXVECTOR parameter DCM set to 1." | Revised – Agree in principle with the commenter. We note that due to the fact that HE ER SU PPDU can used only up to MCS2. We revise the sentence. We also revise the Beacon frame to have it only transmit with HE-MCS up to 7. *The HE ER SU PPDU supports only a single 242-tone or 106-tone RU. An HE ER SU PPDU with a 242- tone RU can only be transmitted with the <HE-MCS, NSS> tuples <MCS 0, 1>, <MCS 1, 1> and <MCS 2, 1>. An HE ER SU PPDU with a 106-tone RU can only be transmitted with the <HE-MCS, NSS> tuple <MCS 0, 1>. The 106-tone RU location within the 20 MHz tone plan is fixed as the one that is higher in frequency.**An HE STA shall support the following features:**— Single spatial stream HE-MCSs 0 to 2 in primary 20 MHz channel for HE ER SU PPDUs.* TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21292 |
| 21293 | Robert Stacey | 424.26 | 26.15.5 | An S-MPDU is an MPDU is a frame so it doesn't carry a frame. | Rewrite as "A Beacon frame transmitted in an HE ER SU PPDU shall be transmited as an S-MPDU." | Revised – Agree in principle with the commenter. TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21293 |
| 21508 | Yonggang Fang | 424.30 | 26.15.5 | ER Beacon should be allowed to set 4xHE-LTF, aligning with HE Beacon.. | add "or 4xHE-LTF" after "2xHE-LTF" | Revised – Agree in principle with the commenter. TGax editor to make the changes shown in 11-19/0288r1 under all headings that include CID 21508 |

**Discussion:**

The reception of HE PPDU with DCM or midamble is optional for a HE non-AP STA. Since HE Beacon needs to be received by all associated or unassociated HE STAs in the range, beamforming can not be reused. It is described in 26.12 HE PPDU post FEC padding and packet extension that a STA transmitting an HE PPDU that carries a group addressed MPDU shall set the value of the TXVECTOR parameter NOMINAL\_PACKET\_PADDING to 16 μs. Based on Table 19-25, aSignalExtension is 0 for 5 GHz band, and it is expected that 6 GHz band does not need signal extension as well.

**Propose:** Revised for CID 21163, 21571, 21296, 21293, 21292, 21508 per discussion and editing instructions in 11-19/0288r1.

***TGax editor: Change “HE beacons” or “HE beacon” or “HE Beacon” to HE SU Beacon across the spec (#21163)***

***TGax editor: Change 26.15.6 Additiional rules for HE beacons in the 6 GHz band as follows: (Track change on)***

**26.15.6 Additional rules for HE SU Beacons in the 6 GHz band**

If the basic HE-MCS and NSS set of the HE AP that starts an HE BSS is not empty, then the HE AP trans-mitting Beacon frames in HE SU PPDUs shall use one of the <HE-MCS, 1> tuples included in the basic HE-MCS and NSS set in the last transmitted HE Operation element, and the HE-MCS is smaller than or equal to 7 ; otherwise the AP transmitting the Beacon frame in HE SU PPDUs shall use one of the mandatory <HE-MCS, NSS = 1> tuples. (#21292)

A Beacon frame transmitted in an HE SU PPDU shall be transmitted as an S-MPDU (see Table 9-532 (A-MPDU contents in the S-MPDU context)). (#21293)

The HE AP transmitting the HE SU PPDU shall set the TXVECTOR parameters CH\_BANDWIDTH to 20 MHz, HE\_LTF\_TYPE to 2xHE-LTF or 4xHE-LTF, GI\_TYPE to 0u8s\_GI or 1u6s\_GI if HE\_LTF\_TYPE is set to 2xHE-LTF, GI\_TYPE to 3u2s\_GI if HE\_LTF\_TYPE is set to 4xHE-LTF, FEC\_CODING to BCC\_CODING, STBC to 0, DCM to 0, DOPPLER to 0, BEAMFORMED to 0, NUM\_STS to 1, NOMINAL\_PACKET\_PADDING to 16 μs, NO\_SIG\_EXTN to true, and BEAM\_CHANGE as defined in 26.11.3 (BEAM\_CHANGE). (#21163, #21571, #21296)

 ***TGax editor: Change 26.15.5 Additiional rules for ER beacons and group addressed frames as follows: (Track change on)***

**26.15.5 Additional rules for ER beacons and group addressed frames**

If the basic HE-MCS and NSS set of the AP that starts an ER BSS is not empty, then the HE AP shall trans-mit Beacon frames and group-addressed frames in HE ER SU PPDUs using one of the <HE-MCS, 1> tuples included in the basic HE-MCS and NSS set in the last transmitted HE Operation element, and the HE-MCS is smaller than or equal to 2. Otherwise, the HE AP shall transmit the Beacon frames and group addressed frames in HE ER SU PPDUs using one of the mandatory <HE-MCS, NSS=1> tuples. (#21292)

A Beacon frame transmitted in an HE ER SU PPDU shall be transmitted as an S-MPDU (see Table 9-532 (A-MPDU contents in the S-MPDU context)). (#21293)

The HE AP transmitting the HE ER SU PPDU shall set the TXVECTOR parameters HE\_LTF\_TYPE to 2xHE-LTF or 4xHE-LTF, GI\_TYPE to 0u8s\_GI or 1u6s\_GI if HE\_LTF\_TYPE is set to 2xHE-LTF, GI\_TYPE to 3u2s\_GI if HE\_LTF\_TYPE is set to 4xHE-LTF, FEC\_CODING to BCC\_CODING, STBC to 0, DCM to 0, DOPPLER to 0, BEAMFORMED to 0, NUM\_STS to 1, NOMINAL\_PACKET\_PADDING to 16 μs, NO\_SIG\_EXTN to true in 6 GHz or 5 GHz band, NO\_SIG\_EXTN to false in 2.4 GHz band , and BEAM\_CHANGE as defined in 26.11.3 (BEAM\_CHANGE). (#21571, #21296, #21163, #21508)

***TGax editor: Change 10.6.5.3 Rate selection for other group addressed Data and Management frames as follows: (Track change on)***

**10.6.5.3 Rate selection for other group addressed Data and Management frames**

This subclause describes the rate selection rules for group addressed Data and Management frames, excluding

the following:

— Non-STBC Beacon, ER Beacon, HE SU Beacon, and non-STBC PSMP frames(#21163)

— STBC group addressed Data and Management frames

— Data frames located in an FMS stream (see 11.22.8 (FMS multicast rate processing))

— Group addressed frames transmitted to the GCR concealment address (see 11.22.16.3.5 (Concealment of GCR transmissions))