IEEE P802.11  
Wireless LANs

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| LB233 CR for Subclause 26.17.6 | | | | |
| Date: 2019-08-27 | | | | |
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Abstract

This submission proposes resolutions of comments received from TGax LB238.

(The proposed change is based on TGax Draft 4.3.)

* CIDs: 20738, 20744, 20745, 21457, 21566 (5 CIDs)

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 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax 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.***

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 20738 | 438.24 | 26.17.6 | Re CID 16091: the rejection did not address the comment. ER beacons don't work for the same reason they didn't work with STBC (and got obsoleted): the AP typically has higher tx power so the AP can reach STAs but STAs can't reach the AP. The slight advantage conferred by the ability of the STA to use 10 MHz transmissions is not sufficient to overcome this. The submissions referenced in the rejection are about longer CPs, but they do not address the link budget issue | Delete this subclause | Rejected-  The CR for CID16091 has indicated the 802.11ax needs to support the use case of outdoor deployment and improve robustness of transmission in outdoor propagation environments. The contribution [11-14-0801] simulated transmission robustness at different CP lengths, and concludes that short CP length does not secure the robustness for outdoor cases. But the legacy non-HT PPDU would not be able to provide longer CP length for improving signal robustment in outdoor scenario.  In addition, 802.11ax introduces the trigger based UL transmission. The parameters for trigger frame transmission are carried in the IE of Beacon frame. As a STA could be scheduled for UL transmission over 26-tones RU, it may have higher link budget on UL than the non-HT PPDU on DL. The ER Beacon can provide additional link budget on DL. Without ER Beacon, the STA may not be able to receive the parameters of the trigger frames carried in the Beacon frame and perfom the trigger based UL transmissions.  Therefore the ER Beacon should be supported in the spec. |
| 20744 |  |  | Re CID 16123: the comment was not addressed by the resolution. Non-ER BSSes need to be protected against ER BSSes, just in the same way that earlier PHYs have had protection mechanisms (see 10.28 Protection mechanisms) | Add to 10.28 a description of the mechanisms by which non-ER BSSes are protected from ER BSSes | Rejected-  The subclause 10.28 describes the protection mechanism of using RTS/CTS or CTS to self prior to the HT transmission for the shared media cases: ERP (11g), HT (11n) and VHT (11ac).  The ER BSS formed by ER Beacon is to provide the extended coverage for HE STAs to receive the Beacon frame more robustly. As the ER Beacon is carried in HE SU PPDU format, any HE STA should be able to understand the ER Beacon, and non-HE STAs should be able to decode the legacy preamble of ER Beacon to set protection. ER BSS does not introduce other PPDU format than HE PPDU. The ER BSS protection should follow the protection of HE PPDU transmission.  For the protection of HE PPDU transmission, the MU-RTS/CTS introduced by 11ax can be used to protect the MU transmissions in either HE BSS or ER BSS. In addition, the RTS/CTS or CTS to Self can also be used for the protection of transmissions in either HE BSS or ER BSS or non ER BSS.  Therefore it is not necessary to have an additional protection mechanism for ER BSS in 10.28. |
| 20745 | 438.24 | 26.17.6 | Re CID 16123: the comment was not addressed by the resolution. Non-ER BSSes need to be protected against ER BSSes, just in the same way that earlier PHYs have had protection mechanisms (see 10.28 Protection mechanisms) | Delete the referenced subclause. | Rejected-  The subclause 10.28 describes the protection mechanism of using RTS/CTS or CTS to self prior to the HT transmission for the shared media cases: ERP (11g), HT (11n) and VHT (11ac).  The ER BSS formed by ER Beacon is to provide the extended coverage for HE STAs to receive the Beacon frame more robustly. As the ER Beacon is carried in HE SU PPDU format, any HE STA should be able to understand the ER Beacon, and non-HE STAs should be able to decode the legacy preamble of ER Beacon to set protection. ER BSS does not introduce other PPDU format than HE PPDU. The ER BSS protection should follow the protection of HE PPDU transmission.  For the protection of HE PPDU transmission, the MU-RTS/CTS can be used to protect the MU transmissions in either HE BSS or ER BSS. In addition, the RTS/CTS or CTS to self can also be used for the protection of transmissions in HE BSS or ER BSS or non ER BSS. |
| 21457 | 438.00 | 26.17.6 | Dual-beacon (STBC beacon) was removed from the IEEE-2016 specification. Now 11ax is adding back dual-beacon (HE ER). I think we know that the industry won't build this feature due to the fact that sending this kind of beacon will encourage devices to use slow data rates thus lowering efficiency, both in-BSS efficiency and multi-BSS efficiency. This comment was rejected based on the need for outdoor (longer GI) operation. HE beacons have some usefulness. HE ER beacons will never be used. | Remove 26.17.6 | Rejected-  Please refer to the CR for CID 20738.  The ER Beacon does not only support longer GI for the outdoor operation for improving the robustness, but also supports 106-tones RU to carry the Beacon frame which is not supported in HE Beacon.  Therefore ER Beacon could provide larger coverage with more robustness for receiption than the HE Beacon. |
| 21566 | 438.43 | 26.17.6 | "An HE AP may use larger CP length of HE ER SU PPDU to further improve the transmission reliability of ER Beacon frames." This sentence does not seem to provide any information. There is no restriction on choosing between various CP lengths, as long as they are supported by the receivers. Adding a 'may' sentence here does not provide any more flexiblity or clarity. | Delete "An HE AP may use larger CP length of HE ER SU PPDU to further improve the transmission reliability of ER Beacon frames." | Revised-  Agree in principle.  TGax editor makes the changes as shown in 11-19/1458 under (#21566) |

***TGax Editor: Change the subclause 27.17.6 as follows: (#21566)***

**26.17.6 ER beacon generation in an ER BSS**

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The HE AP of an ER BSS shall transmit Beacon frames and group addressed frames in HE ER SU PPDUs following the rules in 26.15.5 (Additional rules for ER beacons and group addressed frames). ~~An HE AP may use larger CP length of HE ER SU PPDU to further improve the transmission reliability of ER Beacon frames~~. (#21566)