IEEE P802.11
Wireless LANs

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| LB225 11ax D1.0 Comment Resolution on Clause 10.9 HT Control Field |
| Date: 2017-09-06 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following 14 CIDs on subclause 10.9:

* 3186, 5334, 6174, 6175, 6518, 7021, 7886, 8147, 9327, 9341, 9430, 9687, 9688, 9856.

Revisions:

* Rev 0: Initial version of the document. Using D1.4 as baseline.
* Rev 1: Modified resolution of CID#6175 plus minor editorial changes.
* Rev 2: Corrected minor typo on CID#7886 resolution.

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.***

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3186 | 127.22 | 10.9 | "A value of 1 in the Control ID subfield when the transmitting STA changes the receive operating mode, as described in 27.8 (Operating mode indication)." | "A value of 1 in the Control ID subfield when the transmitting STA changes the receive and/or transmit operating mode, as described in 27.8 (Operating mode indication)." or "A value of 1 in the Control ID subfield when the transmitting STA changes the operating mode, as described in 27.8 (Operating mode indication)." | REVISED - Fixed with CID#5335Already modified to “A value of 1 in the Control ID subfield when the transmitting STA changes its operating mode, as described in 27.8 (Operating mode indication).” via 11-17/0239r2 in the resolution of CID#5335 |
| 5334 | 127.26 | 10.9 | Section 10.31.4 (Link adaptation using the HE variant HT Control field) does not exist | Add Section 10.31.4 (Link adaptation using the HE variant HT Control field) | REVISED – Fixed with CID#5335.Already modified via 11-17/0239r2 in the resolution of CID#5335 and now references to “27.13 (Link adaptation using the HLA Control field(#4727))(#5335, #7888)” in D1.4 |
| 6174 | 127.44 | 10.9 | A-Control field is actually a subfield | Change/check "A-Control field" to "A-Control subfield" throughout the draft; there are multiple other places have such a problem... | ACCEPT.TGax editor shall make the changes throughout the document shown in 17/1304r1 marked by (#6174). |
| 6175 | 127.53 | 10.9 | Line 45-46 already states that the Control subfield must be supported by the STA | This paragraph is redundent | REVISED - AGREE IN PRINCIPLE.However, both paragraphs have been modified in the resolution of CID#7885. TGax editor shall make the changes shown in 17/1304r1 marked by (#6175). |
| 6518 | 127.11 | 10.9 | Unresolved "<reference>". | Resolve it. | Duplicate of CID#9327 |
| 7021 | 127.22 | 10.9 | the text is not only for receive operating mode | Change from "receive operating mode" to "operating mode" | REVISED - Fixed with CID#5335Already fixed as editorial change in 11-17/0239r2during the resolution of CID#5335. |
| 7886 | 127.44 | 10.9 | "If an A-Control field is present in a frame then it shall contain at least one Control subfield, and the Controlsubfield shall be present in the A-Control field only if it is supported by the receiving STA" -- this does not cover A-Controls in multicast frames | Add "(s)" after "STA" | AGREE - TGax editor shall make the changes shown in 17/1304r1 marked by (#7886). |
| 8147 | 127.19 | 10.9 | What does it mean to "expects an HE trigger-based" | Re-word the condition to be more precise. | REVISED – For Control subfield of value 0, the description here should be updated to reflect the changes made in 9.2.4.6.4.2 UMRS Control, in particular the changes contained in document 17/0238r2. TGax editor shall make the changes shown in 17/1304r1 marked by (#8147).  |
| 9327 | 127.12 | 10.9 | The "<reference>" should be specified. | Change "<reference>" to "10.3.2.4". | REVISED –.TGax editor shall make the changes shown in 17/1304r1 marked by (#9327). |
| 9341 | 127.47 | 10.9 | "At most one Control subfield with a given Control ID value shall be present in the A-Control field of QoS Data or Management frames carried in an (A-)MPDU." Does this mean that at most one Control subfield with a given Control ID value shall be present in the A-Control field and the A-Control field with no Control subfield is also allowed? Or does it mean that at most one Control subfield can be present in an (A-)MPDU?I think if a frame carried an A-Control field, a single Control subfield with a given Control ID value shall be contained in the A-Control field, and any of the frames that carried the A-Control field in an A-MPDU shall have the same Control subfield. | Reconsider the sentence to be more clear. Have the same content appear in all of the A-Control fields within the same A-MPDU. | (The previous resolution of this CID was erroneous and was the resolution of CID#9431)REVISED - AGREE IN PRINCIPLE.The clarity of this and the following paragraph needs improvement. Resolved in the resolution of CID# 6175. |
| 9430 | 127.15 | 10.9 | The sentence "The HE variant HT Control field carried in the frame may contain a Control subfield supported by the intended receiver that has:" is not clear and confusing. | Change the sentence "The HE variant HT Control field carried in the frame may contain a Control subfield supported by the intended receiverthat has:" into "The HE variant HT Control field carried in a frame may contain a Control subfield that has:" | REJECTED.Here “the” frame refers to the frame in the previous sentence and the use of ‘intended receiver’ is clear. |
| 9687 | 126.65 | 10.9 | The MIB variable conditions for Buffer Status Report (BSR), UL Power Headroom, Bandwidth Query Report (BQR) and Reverse Direction Protocol (RDP) are missing. | For setting dot11HEControlFieldOptionImplemented to true, add the MIB variable conditions of Buffer Status Report (BSR), UL Power Headroom, Bandwidth Query Report (BQR) and Reverse Direction Protocol (RDP). | REVISED - AGREE IN PRINCIPLE. Additional MIB variables dot11HEBSRControl-Implemented, dot11HEUPHControl-Activated, dot11HEBQRControl-Implemented, have already been defined in the resolution of CID# 4750.  |
| 9688 | 127.48 | 10.9 | Please clarify whether the A-Control field can be present in a non-HT PPDU.A PSDU of an HE PPDU is always an A-MPDU.If an intention of this sentence is not addressing a non-HT PPDU case, please change it as the following:"...of QoS Data or Management frames carried in an A-MPDU." | As per comment. | REJECTED.A-Control field can be present in a non-HT PPDU. No more clarification is not needed. |
| 9856 | 127.22 | 10.9 | OMI indicates operating mode for both transmit and receive. | Modify the second bullet to "A value of 1 in the Control ID subfield when the transmitting STA changes the receive or transmit operating mode, as described in 27.8 (Operating mode indication).". | REVISED - Fixed with CID#5335Already fixed as editorial change in 11-17/0239r2 during the resolution of CID#5335. |

**Discussion:**

**TBD.**

**Proposed Resolution:**

*TGax editor: change subclause 10.9 as follows (CID xxxx):*

* HT Control field operation

Change 10.9 as follows:

If the value of dot11HTControlFieldSupported is true, a STA shall set the +HTC Support subfield of the HT Extended Capabilities field of the HT Capabilities element to 1 in HT Capabilities elements that it transmits. If the value of dot11VHTControlFieldOptionImplemented is true, a STA shall set the +HTC-VHT Support subfield of the VHT Capabilities Information field of the VHT Capabilities element to 1 in VHT Capabilities elements that it transmits. If dot11HEControlFieldOptionImplemented is true, a STA shall set the +HTC-HE Support subfield of the HE Capabilities Information field of the HE Capabilities element to 1 in HE Capabilities elements that it transmits.

A STA that has a value of true for at least one of dot11RDResponderOptionImplemented, dot11MCSFeedbackOptionImplemented, and dot11AlternateEDCAActivated shall set dot11HTControlFieldSupported or dot11VHTControlFieldOptionImplemented or both to true. A STA for which at least one of dot11HEULMUResponseSchedulingOptionImplemented, dot11HEMCSFeedbackOptionImplemented, dot11OMIOptionImplemented, dot11HEBSRControlImplemented, dot11HEUPHControlActivated, dot11HEBQRControlImplemented, or dot11HECASControlImplemented(#4750) is true shall set dot11HEControlFieldOptionImplemented to true.

An HT variant HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-HT in the HT Extended Capabilities field of its HT Capabilities element (see 9.2.4.6 (HT Control field)).

A VHT variant HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-VHT in the VHT Capabilities Information field of its VHT Capabilities element or in the S1G Capabilities Information field of S1G Capabilities elements that it transmits(11ah).

NOTEAn HT STA that does not support +HTC (HT or VHT variant) that receives a +HTC frame addressed to another STA still performs the CRC on the actual length of the MPDU and uses the Duration/ID field to update the NAV, as described in 10.3.2.4 (Setting and resetting the NAV)(#9327).

An HE variant HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-HE in the HE MAC Capabilities Information field(#4751) of the HE Capabilities element. The HE variant HT Control field carried in the frame may contain a Control subfield supported by the intended receiver that has:

* A value of 0 in the Control ID subfield when the transmitting STA expects an HE TB PPDU that follow the UMRS information as described in 27.5.2.2 (Rules for soliciting UL MU frames) (#8147).
* A value of 1 in the Control ID subfield when the transmitting STA changes its(#5335) operating mode, as described in 27.8 (Operating mode indication).
* A value of 2 in the Control ID subfield when the transmitting STA follows the HE link adaptation procedure, as described in 27.13 (Link adaptation using the HLA Control field(#4727))(#5335, #7888).
* A value of 3 in the Control ID subfield when the transmitting STA follows the corresponding buffer status report procedure, as described in 27.5.2.5 (HE buffer status feedback operation for UL MU)
* A value of 4 in the Control ID subfield when the transmitting STA follows the UL MU operation procedure, as described in 27.5.2.3 (STA behavior for UL MU operation(#8151))(#8162).
* A value of 5 in the Control ID subfield when the transmitting STA follows the bandwidth query report procedure, as described in 27.5.1.3 (HE bandwidth query report operation for MU(#3158, #5127)).
* A value of 6 in the Control ID subfield when the transmitting STA follows the reverse direction protocol procedure as described in 10.28 (Reverse Direction Protocol).(#5960)

If the HT Control field is present in an MPDU aggregated in an A-MPDU, then all MPDUs of the same frame type (i.e., having the same value for the Type subfield of the Frame Control field) aggregated in the same A-MPDU shall contain an HT Control field. The HT Control field of all MPDUs containing the HT Control field aggregated in the same A-MPDU shall be set to the same value.(#7666)

If an A-Control subfield(#6174) is present in a frame then it shall contain at least one Control subfield, and the Control subfield shall be present in the A-Control subfield(#6174) only if it is supported by the receiving STA(s)(#7886); otherwise it shall not be present. An HE STA that receives an A-Control subfield(#6174) shall ignore a Control field with a Control ID subfield whose value is not recognized or is not supported by the STA.(#6175)For any Control ID value only one Control subfield(#6175) shall be present in the A-Control subfield(#6174) of QoS Data, QoS Null,(#7253) or Management frames carried in an (A-)MPDU. (#6175)(#5947)

NOTE—An A-Control field that is present in a frame cannot contain only the Padding subfield.

(#7885)(#6175)

If the HT variant HT Control field is present in an MPDU, the DEI subfield provides information on the drop eligibility of the contents of the received MPDU. When there are insufficient resources in a STA, the STA arbitrarily discards frames in order to recover from the lack of resources. With the information from the DEI subfield, a STA may selectively drop frames with the DEI subfield set to 1 in preference to frames with the DEI subfield set to 0, if resources are insufficient. Note that this might not help in the recovery in all conditions, and the STA might still have to fall back to the arbitrary discard strategy. The mechanisms for determining whether resources are insufficient or when to discard MSDUs or A-MSDUs are beyond the scope of this standard.(#7666)

If the value of dot11S1GControlFieldOptionImplemented is true, an S1G STA shall set the +HTC-VHT Capable subfield of the S1G Capabilities Information field of the S1G Capabilities element that it transmits to 1.(11ah)