IEEE P802.11  
Wireless LANs

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| **CIDs for: Section 27.5.2.4**  **UL MU CS – Setting of CS Required Bit** |
| **Date:** 2017-03-09 |

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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Kiseon Ryu | LG | Yangae 11gil, Seocho-gu, Seoul, Republic of Korea | +82-10-2356-6164 | kiseon.ryu@lge.com |

Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (5 **CIDs**):

* Provided the resolutions for CID3231, 6690, 6691, 6692, 9637

Revisions:

- Rev 0: Initial version of the document.

- Rev 1: Resolution of CID#6692 is changed from ‘Revised’ to ‘Rejected’

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** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 3231 | 170.61 | By "The AP shall set the CS Required subfield to 1 except when all solicited HE trigger-based PPDUs contain an Ack or BlockAck frame and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418.", only when all RUs seek a response frame CS=0, leading to the cases where one or more RUs (but not all) seel a response frame and the AP would set CS=1; i.e. those STAs sending response frame have to sense the medium for transmitting their response frame. This is a departure from legacy behavior where STAs sende response frames (except CTS) without CS. Need to fix this either by having individual CS or by defining the AP behvior to avoid such cases. | As in the comment | Revised.  Agree in principle with the comment.  A Trigger frame with CS Required bit set to 0 is usually individually addressed and sent in HE MU PPDU, which solicits a HE trigger-based Ack. And it’s also used for a MU-BAR/GCR MU-BAR.  The condition to unset the CS Required bit is clarified in this document.  TGax editor to make the changes shown in 11-17/0349r1 under all headings that include CID 3231. |
| 6690 | 170.61 | A question of clarification: the AP does not have to set CS Required = 1 when all HE trigger-based frames contain an Ack or BlackAck frame. When taken together with the rest of the draft, does this mean that all solicited HR trigger-based frames may contain ONLY an Ack or BlackAck? Or may these HE trigger-based frames contain other data aggregated with or piggybacked onto the Ack or BlockAck? The latter should be clearly unacceptable, as it would permit a radical departure from the fundamental groundrules of the entire technology via the simple expedient of tacking an Ack or BlockAck onto other data. | Clarify that the condition means that all solicited HE trigger-based frames shall contain ONLY an Ack or BlockAck. | Revised.  Agree in principle with the comment. Text is clarified in this document.  TGax editor to make the changes shown in 11-17/0349r1 under all headings that include CID 6690. |
| 6691 | 170.61 | Why is there an exception to the usual CS rules when the HE trigger-based frames contain an Ack or BlockAck? The CS rules are there to ensure coexistence, and any departure from them needs to be justified by (at least) a demonstrated infeasibility of any alternative. Here that has not been demonstrated and it seems it could not be demonstrated: the existing rules have served the technology very well, including Acks and BlockAcks. | Remove the exception for the case where all solicitied HE trigger-based PPDUs contain an Ack or BlockAck. | Revised.  Unsetting the CS Required bit for HE trigger-based PPDU Ack follows the legacy CS rule. The condition to unset the CS Required bit is clarified in this document.  TGax editor to make the changes shown in 11-17/0349r1 under all headings that include CID 6691. |
| 6692 | 170.63 | It seems from this text that an AP can unilaterally permit STAs to transmit "without regard to the busy-idle state of the medium" (line 56 above) for a time up to 584 microseconds (line 2 of the next page). Yes, there are some restrictions, but on the other hand we should note that when this permission is granted, mutliple STAs are simultaneously permitted to ignore the normal rules. This seems very strange. No such permission should ever be given unless there is a strong showing of necessity, which doesn't seem to be the case here. Even if the mechanism is included, there should be much stronger safeguards before it is invoked. | Delete the CS Required bit and all text associated with CS Required = 0 in the draft. | Rejected.  CS Required bit is set to 0 only in the limited case such as the individually addressed Trigger frame triggering HE trigger-based PPDU Ack or the MU-BAR or GCR MU-BAR Trigger frame, which follows the legacy CS rule ‘no carrier sensing to send an Ack or a BA frame’. |
| 9637 | 170.61 | "The AP shall set the CS Required subfield to 1 except when all solicited HE trigger-based PPDUs contain an Ack or BlockAck frame and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418." When AP transmits a Trigger frame with the CS Required subfield set to 0 and QoS DATA frame with the Ack Policy subfield set to MU ACK within a same PPDU, if a target STA receives only the Trigger frame, what is happened? Probably, the target STA can transmit a QoS Null frame without having any Ack or BlockAck frame in an HE trigger-based PPDU. So, current spec text is nonsense. Because AP transmitting a Trigger frame with the CS Required subfield set to 0 can't predicts that all solicited HE trigger-based PPDUs contain an Ack or BlockAck frame. | Change it as the following: "The AP shall set the CS Required subfield to 1 except when it solicits an Ack or BlockAck frame in all scheduled HE trigger-based PPDUs and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418." | Revised.  Agree in principle.  TGax editor to make the changes shown in 11-17/0349r1 under all headings that include CID 9937. |

**Discussion:** *None.*

**Propose:**

Revised for CID 3231, 6690, 6691, 9637 per discussion and editing instructions in 11-17/0349r1.

***TGax editor: Modify the sentence on page 175 line 19 (D1.1) as the following:***

The AP shall set the CS Required subfield to 1 except when ~~all solicited HE trigger-based PPDUs contain an Ack or BlockAck frame and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418~~ one of the following conditions is met. (#3231, 6690, 6691, 9637)

* The RA of the Trigger frame is an individually addressed STA’s MAC address and a QoS Data frame with Ack Policy set to HE trigger-based PPDU (HTP) Ack is aggregated with the Trigger frame in an A-MPDU, and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418.
* The Trigger Type of the Trigger frame is either MU-BAR or GCR MU-BAR, and the Length subfield in the Common Info field of the Trigger frame is less than or equal to 418.