IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CR on CID 12699, 13220 | | | | |
| Date: 2018-02-27 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Zhou Lan | Broadcom Ltd. | 250 Innovation Dr, San Jose, CA 95134 | +1-408-9223450 | zhou.lan@broadcom.com |
| Chunyu Hu | Broadcom Ltd. | 250 Innovation Dr, San Jose, CA 95134 |  | chunyu.hu@broadcom.com |
| Matthew Fischer | Broadcom Ltd. | 250 Innovation Dr, San Jose, CA 95134 |  | matthew.fischer@broadcom.com |

Abstract

This submission proposes resolutions for multiple comments related to TGax D2.2 with the following CIDs:

* 12699, 13220

Revisions:

* Rev 0: Initial version.

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** | **Commenter** | **clause** | **Comment** | **Proposed Change** | **Resolution** |
| 12699 | Mark RISON | 267.06 | "The HE beamformee that is the intended receiver of an HE NDP Announcement frame that has only one STA Info field shall ignore the values of the Nc subfield, Ng subfield (B26 of the STA Info subfield) and Codebook Size subfield" -- and then do what for those params? And if the Feedback Type And Ng subfield is 0 (previous sentence) then only SU-type feedback can be provided | Change the cited text to "The HE beamformee that is the intended receiver of an HE NDP Announcement frame that has only one STA Info field shall ignore the values of the Feedback Type And Ng, Codebook Size and Nc subfields and shall provide SU-type feedback" | Rejected –  CQI-only feedback should be allowed for non-TB sounding sequence as discussed in the discussion section.  TGax editor to make the changes shown in 11-18/0446r0 under all headings that include CID 12699. |
| 13220 | Robert Stacey | 264.37 | Can an HE non-TB sounding sequence solicit MU-type feedback? CQI feedback? Presumably, since a non-AP STA must support the MU beamformee role but may not support the Triggered MU feedback. | Rewrite as: "The HE NDP Announcement frame in an HE non-TB sounding sequence may solicit SU, MU or CQI-only feedback." | Revised –  As discussed early in this document, CQI-only and MU type of feedback should be allowed for DL MU operation. However, sounding individual STA that participates in the DL MU MIMO operation may have overhead issue. So we propose to only enable CQI-only feedback in the non-TB sounding sequence.  TGax editor to make the changes shown in 11-18/0446r0 under all headings that include CID 13220. |

## Discussion:

D2.2 allows STAs that participate the DL MU (DL OFDMA or DL MU MIMO) turn off the UL MU opearation using OMI. These STAs can not be triggered by the AP. Therefore AP can not utilize TB-based sounding sequence to obtain sounding reports from these STAs. In order to obtain sounding feedback to schedule DL OFDMA or MU MIMO operation, AP can only use HE non-TB based sounding sequence. The current text in D2.2 disallows CQI only feedback or MU feedback in the HE non-TB based sounding sequence. We propose to allow CQI only feedback in the HE non-TB sounding sequence to facilitate the mandatory DL OFDMA operation.

Issue:

**SU type feedback**: MIMO Control field + Compressed Beamforming Report

**MU type feedback**: MIMO Control + Compressed Beamforming Report + MU Exclusive Beamforming Report

**CQI-only feedback**: MIMO Control + CQI-only Report

Compressed Beamforming Report provides **average SNR over the sounding bandwidth** and V matrix.

MU Exclusive Beamofrming Report provides **delta SNR of spatial streams**.

CQI-only feedback: provides **average SNR over each RU**.

Therefore the SU feedback from the beamformee is not sufficient for the beamformer (i.e. the AP) to schedule the DL OFDMA operation.

9.4.2.237.3 HE PHY Capabilities Information field

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12699, 13220): convert Bit 75 (reserved bit) to Non-Triggered CQI Feedback bit***

***Please refert to submission 802.11-18/409r1.*Table 9-262aa—Subfields of the HE PHY Capabilities Information field(#11466)**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| …. | … | … |
| Non-Triggered CQI Feedback | For an AP, indicates support for the reception of full bandwidth Non-Triggered CQI-only feedback.  For a non-AP STA, indicates support for the transmission of full bandwidth Non-Triggered CQI-only feedback. | Set to 0 if not supported.  Set to 1 if supported. |
| … | … | … |

27.6.2 Sounding sequences and support

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12699, 13220):***

An HE STA indicates its role in a sounding sequence, the support of HE sounding sequences, and the supported type of sounding feedback by setting the subfields of the HE Capabilities element it transmits as follows:

……

* If an AP is an HE beamformer then it shall set the Triggered SU Beamforming Feedback and Triggered CQI Beamforming Feedback subfield to 1 if it supports receiving in the HE Compressed Beamforming Report field SU and CQI feedback, respectively, where the feedback is full and partial bandwidth; otherwise, set to 0.
* If a non-AP STA is an HE beamformee then it shall set the Triggered SU Beamforming Feedback and Triggered CQI Beamforming Feedback subfields to 1 if it supports including in the HE Compressed Beamforming Report field SU and CQI feedback, respectively, where the feedback is full and partial bandwidth; otherwise, set to 0.
* If an AP is an HE beamformer then it shall set the non-Triggered CQI Beamforming Feedback subfield to 1 if it supports receiving the CQI-only feedback in the non-TB sounding sequence, where the feedback is full bandwidth; otherwise, set to 0. ***(#CID 12699, 13220)***
* If a non-AP STA is an HE beamformee then it shall set the non-Triggered CQI Beamforming Feedback subfield to 1 if it supports transmitting the CQI-only feedback in the non-TB sounding sequence, where the feedback is full bandwidth; otherwise, set to 0. ***(#CID 12699, 13220)***

…..

* Rules for HE sounding protocol sequences

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12699, 13220):***An HE beamformer initiates an HE non-trigger-based (non-TB) sounding sequence by sending an individually addressed NDP Announcement frame that contains one STA Info field that is addressed to an HE beamformee.

An HE beamformer may initiate an HE non-TB sounding sequence with an HE beamformee to solicit SU or CQI-only (#13220)feedback over full bandwidth(#13221).

An HE beamformer may initiate an HE non-TB sounding sequence with an HE beamformee to solicit a feedback variant over full bandwidth(#13221) only if the feedback variant is computed based on parameters supported by the HE beamformee; otherwise the HE beamformer shall not solicit a feedback variant over full bandwidth(#13221) computed based on parameters not supported by the HE beamformee (see 27.6.2 (Sounding sequences and support)(#12514)).

An HE beamformer shall not initiate an HE non-TB sounding sequence to solicit any feedback variant over partial bandwidth(#13221) from an HE beamformee.

…….

An HE beamformer that transmits an HE NDP Announcement frame that has only one STA Info field shall set the Nc subfield to 0 and the Feedback Type And Ng subfield to 0 except when the HE NDP Anouncement frame requests for CQI-only feedback (#12699). The HE beamformee that is the intended receiver of an HE NDP Announcement frame that has only one STA Info field shall ignore the values of the Nc subfield except when the HE NDP Anouncement frame requests for CQI-only feedback (#12699), Ng subfield (B26 of the STA Info subfield) and Codebook Size subfield.

…….