IEEE P802.11
Wireless LANs

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| Comment Resolutions on Clause 28.3.15 (SU-MIMO and DL MU-MIMO beamforming)  |
| Date: 2017-12-12 |
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Abstract

This submission proposes resolutions for the following 3 comments on 28.3.15 (SU-MIMO and DL MU-MIMO beamforming) of TGax D2.0:

13379, 13413, 13414

Revisions:

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** | **Clause Number** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 13379 | 28.3.15.2 | 483.61 | "The number of bits for quantization is set by the beamformer, i.e. HE AP."  This line is redundant, because the following line gives more accurate description. | "The number of bits for quantization is set by the beamformer, i.e. HE AP."  This line is redundant, because the following line gives more accurate description. | RevisedThis line indicates that typically, the number of bits for quantization is set by the beamformER (AP). The next line indicates that it is set by the beamformEE (STA) in a specific scenario i.e. only one STA is required to send feedback.Revised statement to highlight the differences.TGax editor to make the changes shown in 11-18/0079 under all headings that include CID 13379 |
| 13413 | 28.3.15.1 | 483.14 | K\_r is not clearly defined | K\_r is not clearly defined | AcceptedPointed to definition of K\_r and added text to reinforce this.TGax editor to make the changes shown in 11-18/0079 under all headings that include CID 13413 |
| 13414 | 28.3.15.3 | 484.22 | We have "The CQI-only feedback CQIs,r,u" but meaning of subscript u is undefined. | We have "The CQI-only feedback CQIs,r,u" but meaning of subscript u is undefined. | AcceptedAdded definition of subscript u as index of beamformee.TGax editor to make the changes shown in 11-18/0079 under all headings that include CID 13414 |

*Discussion*

*#13379*

In typical feedback, the HE NDP announcement frame (9.3.1.20) from the AP to the STAs contains the Feedback Type and NG field in each STA info subfield (Figure 9-51b, Table 9-25a). This field contains the Type (SU/MU), tone grouping (Ng), and quantization resolution (phi, psi). It also contains the Nc field i.e. the number of colums fed back. This is captured by the first line discussed by the comment. The second line says that if there is only one STA, the STA will override the number of bits for quantization, etc. We will add the other parameters to the first sentence and the word “however” to minimize the possible confusion.

*#13413*

K\_r is defined in Table 28-15 (Frequently used parameters) on pg 393 line 43 as “the set of used subcarrier indices in the r-th RU”. Although it has been previously defined, we will add some text to enable the reader understand what it is.

*Changes to D2.0*

***TGax Editor: Please make the following change on Pg 483 ln 61 (#13379):***

The number of bits for quantization, tone grouping factor, and the number of columns in the HE Compressed beamforming feedback are ~~is~~ set by the beamformer, i.e., HE AP. However, t~~T~~he number of bits for quantization, tone grouping factor, and the number of columns in the HE Compressed beamforming feedback are set by the beamformee, i.e., non-AP STA, only if the NDP Announcement frame contains only one STA Info field. (#13379)

***TGax Editor: Please make the following change on Pg 483 ln 14 (#13413):***

where subcarrier *k* is one of the subcarriers in RU *r*, *Kr* is the set of used subcarriers indices in RU *r*, and k ∈ *Kr* (#13413)

***TGax Editor: Please make the following change on Pg 484 ln 22 (#13414):***

The CQI-only feedback,$CQI\_{s,r,u}$, for beamformee u in RU $r $for space time stream $s$ shall be… (#13414)

**References:**

1. **IEEE P802.11axTM/D2.0, Nov 2017.**