IEEE P802.11
Wireless LANs

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| Comment resolutions for 27.6 and 27.6.1 |
| Date: 2018-01-05 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D2.0 with the following CIDs:

* 11508, 11764, 11765, 12758, 12773, 13286, 13775, 14337 (8 CIDs)

Revisions:

* Rev 0: Initial version of the document.

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** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 11508 | Chunyu Hu | 263.08 | "As with the VHT sounding protocol," doesn't provide much technical vlaue here. Clarify otherwise remove it. | as in the comment | Revised –Agree in principle. Proposed resolution removes that portion of the sentence since ti is redundant. TGax editor to make the changes shown in 11-18/0043r0 under all headings that include CID 11508. |
| 11764 | GEORGE CHERIAN | 263.22 | Make this normative: "Otherwise, the HE beamformingfeedback is segmented and each segment is carried in an HE Compressed Beamforming And CQI Reportframe." | Make it normative | Revised –The normative behavior is defined in 27.6.3 and 27.6.4. Proposed resolution adds references to those subclauses. TGax editor to make the changes shown in 11-18/0043r0 under all headings that include CID 11764. |
| 11765 | GEORGE CHERIAN | 263.24 | Make this normative: "For CQI-type feedback the HE compressed beamforming feedback is never segmented since the resulting MPDU size will always be less than 11 454 octets" | Make it normative | Revised –Agree with comment. Proposed resolution replaces the statement with a normative one. TGax editor to make the changes shown in 11-18/0043r0 under all headings that include CID 11765. |
| 12758 | Mark RISON | 263.14 | The concepts "SU-type" and "MU-type" are never defined | Define these concepts; also have a NOTE that the way in which the feedback is obtained (trigger-based, i.e. UL MU or non-trigger-based, i.e. UL SU) is orthogonal to the feedback type | Revised –Agree in principle with comment. Proposed resolution organizes the sentences so that these concepts are defined, inline with the proposed change. Similar observation for the TB and non-TB sounding, which is added in the paragraph that precedes this one. TGax editor to make the changes shown in 11-18/0043r0 under all headings that include CID 12758. |
| 12773 | Mark RISON | 263.01 | There are 5 references to 11454 octets, but an HE STA is not required to support 11k MPDUs (see Table 9-19) | Refer to the maximum MPDU length supported by the beamformer rather than 11454 octets | Rejected –The requirements in Table 9-19 refer to the MPDU size that a STA supports in receive. The rules in this subclause are related to the transmission of HE compressed beamforming feedback. The minimum support of 11454 octet was added to avoid segmentation as much as possible. Please refer to this contribution for more details: <https://mentor.ieee.org/802.11/dcn/16/11-16-0646-01-00ax-he-beamforming-feedback.pptx> |
| 13286 | Robert Stacey | 263.11 | Identify the training signal as the HE NDP PPDU | Change to "...using a training signal (HE NDP PPDU) transmitted..." | Revised –Agree in principle with the comment. Proposed resolution is inline with the proposed change.TGax editor to make the changes shown in 11-18/0043r0 under all headings that include CID 13286. |
| 13775 | Yanchun Li | 263.01 | 11ax adopts UL MU MIMO scheme. However, it is lack of coordination scheme to control non-AP STAs' UL precoding vectors. In such situation, severe inter-STA interference may occur. Some iterative/successive interference cancellation may reduce interference impact, but its implementation complexity at receiver (AP) is high. So, scheme to avoid severe inter-STA interference is needed in 11ax UL MU MIMO. |  | Rejected –Inter-STA interference is an inherent property of the wireless medium, which has been tackled via multiple existing methods (EDCA, ED/PD CCA), and newly introduced ones exclusive to 11ax (two NAV, power control etc). It is the group’s opinion that additional schemes for this purpose are not needed. |
| 14337 | Zhou Lan | 263.08 | "As with the VHT sounding protocol," doesn't provide much technical vlaue here. Clarify otherwise remove it. | as in the comment | Revised –Duplicate CID of 11508. The proposed resolution is the same as for CID 11508. See CID 11508. |

**Discussion: *None.***

* HE sounding protocol
* General

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 11508, 12758, 13286):***

Transmit beamforming and DL MU-MIMO require knowledge of the channel state to compute a steering matrix that is applied to the transmit signal to optimize reception at one or more receivers. HE STAs use the HE sounding protocol to determine the channel state information. The HE sounding protocol provides*(#11508)* explicit feedback mechanisms, defined as HE non-trigger-based (non-TB) sounding and trigger-based (TB) sounding,*(#12758)* where the HE beamformee measures the channel using a training signal (i.e., an HE NDP)*(#13286)* transmitted by the HE beamformer and sends back a transformed estimate of the channel state. The HE beamformer uses this estimate to derive the steering matrix.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 11764, 11765, 12758):***

The HE beamformee returns an estimate of the channel state in an HE compressed beamforming feedback contained in one or more HE Compressed Beamforming And CQI Report frames (see 9.6.28.2). There are three types of HE compressed beamforming feedback:

1. SU feedback: The HE Compressed Beamforming And CQI Report frame carrying the SU feedback consists of an HE MIMO Control field and an HE Compressed Beamforming Report field
2. MU feedback: The HE Compressed Beamforming And CQI Report frame carrying the MU feedback consists of an HE MIMO Control field, an HE Compressed Beamforming Report field, and an HE MU Exclusive Beamforming Report field
3. CQI feedback: The HE Compressed Beamforming And CQI Report frame carrying the CQI feedback consists of an HE MIMO Control field and an HE CQI-only Report field

 *(#12758)*. The HE compressed beamforming feedback is carried in a single HE Compressed Beamforming And CQI Report frame if the resulting frame is less than or equal to 11 454 octets in length (see 27.6.3 (Rules for HE sounding protocol sequences))*(#11764)*. Otherwise, the HE beamforming feedback is segmented and each segment is carried in an HE Compressed Beamforming And CQI Report frame (see 27.6.4 (Rules for generating segmented feedback))*(#11764)*. (17/1262r2)*(#11765)*

**27.6.3 Rules for HE sounding protocol sequences**

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 11765):***

The HE compressed beamforming feedback shall be transmitted in a single HE Compressed Beamforming And CQI frame unless the size of the feedback results in an HE Compressed Beamforming And CQI frame that would exceed 11 454 octets, in which case the feedback shall be segmented as defined in 27.6.4 (Rules for generating segmented feedback). The HE beamformee shall not segment an HE compressed beamforming feedback that is CQI-type feedback. (17/1262r2)*(#11765)*