IEEE P802.11  
Wireless LANs

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| Comment resolution for HE Sounding Section 27.6.2 | | | | |
| Date: 2017-01-17 | | | | |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following CIDs (6 CIDs):

* 7840, 7959, 8502, 9771, 8715, 10071

Revisions:

* Rev 0: Initial version of the document.
* Rev 1.0: Updated spec changes to D1.1

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.***

# HE Sounding Section 27.6.2

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 7840 | Mark RISON | 176.14 | There should be a mechanism to allow an HE BFer to poll for missed segments. It is not clear whether a BRP frame can be used in the SU case, and the BRP variant Trigger frame cannot be used in the MU case as it is preceded by an NDP that will take precedence | Allow Beamforming Report Poll frames to be used to solicit SU retransmission of missed segments (cf. 10.34.5.3). Define a new Trigger frame variant to solicit MU retransmission of missed segments (without a preceding NDP+NDPA). Delete the Feedback Segment Retransmission Bitmap from the Trigger Dependent User Info field of the Beamforming Report Poll variant Trigger frame (leaving it blank); this is the field needed for the new Trigger frame variant to solicit retransmission of missing segments | Rejected  Segementation of the beamforming feedback is only allowed if the feedback is greater than the beamformer’s maximum MPDU length capability. The maximum MPDU length for an HE beamformer is 11,454 octets. Most SU feedback is less than 11,454 octets so the HE beamformee shall send the feedback as one segment. Given that the feedback is sent as one segment in most cases there is no value in allowing a new Trigger frame which solicits missed segments.  Further even in the case where the feedback is sent as two segments the beamformer can always resound and get the full feedback, this also ensures that the feedback is not stale. |
| 7959 | Mark RISON | 177.38 | It is not clear how missed segments are requested in the SU PPDU case. The problem is that the only way to do this is to send a BRP variant Trigger, but such a trigger would be preceded by an NDPA with only one STA Info, which would confuse the beamformee | Add a "NOTE---If an HE beamformer does not successfully receive all feedback segments from the HE beamformee, it cannot use a Beamforming Report Poll variant Trigger frame unless it has another HE beamformee to poll. In this case it can only repeat the entire sequence." | Rejected  Segementation of the beamforming feedback is only allowed if the feedback is greater than the beamformer’s maximum MPDU length capability. The maximum MPDU length for an HE beamformer is 11,454 octets. Most SU feedback is less than 11,454 octets so the HE beamformee shall send the feedback as one segment. Given that the feedback is sent as one segment in most cases there is no value in allowing a new Trigger frame which solicits missed segments.  Further even in the case where the feedback is sent as two segments the beamformer can always resound and get the full feedback, this also ensures that the feedback is not stale. |
| 8502 | Robert Stacey | 179.04 | Even if the feedback is greater than 11454B, it may be sent in a single PPDU since the segmented report can be sent in MPDUs aggregated into a single A-MPDU. In fact, this should be the preferred way to send feedback. If there is a constraint it is on the duration of the PPDU. | We should limit options here: Require the complete report in a single MPDU or all segments of a segmented report in a single A-MPDU unless the resulting PPDU duration exceeds the duration indicated in the Duration field of the HE NDP Announcement frame (or some absolute limit). Consider applying these rules to the VHT sounding protocol as well (to minimize implementation variation). | Rejected  The baseline specification already specifies this: “All feedback segments shall be sent in a single A-MPDU and shall be included in the A-MPDU in the descending order of the Remaining Feedback Segments subfield values”.  Therefore the baseline specification already enables that the segments shall be sent in a single A-MPDU. It is the responsibility of the transmitter in the case of SU to select a MCS such that the PPDU duration is not exceeded. This is true for all PPDU transmissions and hence need not be repeated. |
| 9771 | Youhan Kim | 344.56 | A beamformer may choose to apply certain spatial mapping matrix to the NDP PPDU where channel smoothing at the receiver side is not desired. Hence, if the Beamformed bit is set to 1 in an NDP PPDU, the receiver shall not perform channel smoothing in generating the sounding feedback. | Add to P344L56 "If the Beamformed bit in the HE-SIG-A of an HE NDP PPDU is set to 1, then the receiver of the HE NDP PPDU shall not perform channel smoothing when generating the compressed beamforming feedback report." | Accepted.  Please see resolution to CID 9771 in document 11/17 0309. |
| 8715 | Sigurd Schelstraete | 178.65 | Add the following requirement for HE NDP feedback from the beamformee: "If the HE NDP is received with the field TxBF in HE-SIG-A set to 1, the beamformee shall not apply channel smoothing during its estimation of the channel that is used to determine the HE sounding feedback." | See comment | Revised.  Please see resolution to CID 8715 in document 11/17 0309. |
| 10071 | yujin noh | 179.24 | 4x HE-LTF and 0.8us has been introduced in the spec in order to make sure the channel estimation accuary with small delay spread for MIMO or MU-MIMO scenarios. TXVECTOR parameter in HE NDP should include GI\_TYPE set to 0.8 when HE\_LTF\_TYPE is set to 4x HE-LTF | GI\_TYPE set to either 0.8 us or 1.6 us when HE\_LTF\_TYPE is set to 2x HE-LTF; otherwise GI\_TYPE set to either 0.8us or 3.2 us. | Reject  The saving is not significant with the GI type and with an effort to reduce the number of modes for implementation and testing the GI modes have been pruned. |

**Discussion: *None.***

**TGax Editor: *Please make the change on Draft 11ax D1.1, Page 353, and line 7 as follows (#CID 8715, 9771):***

The HE NDP PPDU has the following properties:

* Uses the HE SU PPDU format but without the Data field
* Has a Packet Extension field that is 4 us in duration
* If the Beamformed bit in the HE-SIG-A of an HE NDP PPDU is set to 1, then the receiver of the HE NDP PPDU shall not perform channel smoothing when generating the compressed beamforming feedback report.