IEEE P802.11
Wireless LANs

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| 11ax D2.0 Comment Resolution 27.5.3.2.3 |
| Date: 2018-01-09 |
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Abstract

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

* ~~11314,~~ 12226, ~~12883,~~ 13709, 13716, 14257, 14318.

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** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| ~~11314~~ | ~~247~~ |  | ~~Organize these paragraphs as a bulleted list (technical content to remain the same): One for TID aggregation limit set to 0, one for TID Aggregation Limit set to 1, one for TID Aggregation limit greater than 1.~~ | ~~As in comment.~~ | **~~Revised~~****~~TGax editor to make change in 11-18/0076r2 under 11314~~** |
| ~~11315~~ | ~~248~~ | ~~1~~ | ~~This paragraph is not related to the settings of the fields of the Trigger frame but rather of what can carry the TF. As such it belongs to the general section.~~ | ~~Move the paragraph to 27.5.3.2.1.~~ |  |
| ~~11316~~ | ~~248~~ | ~~8~~ | ~~Logically the third paragraph should be the first paragraph. And the first and second paragraph should be one paragraph that covers: An AP that sends a Trigger frame and 1)receives an HE TB PPDU ... 2) does not receive any HE TB PPDU ...~~ | ~~Organize these three paragraphs as suggested in the comment.~~ |  |
| 12226 | 247 | 32 | An AID12 subfield with a value of 2046 may be used to indicate the unassigned RUs in a trigger frame. How to set the other subfields of User Info field for the unassigned RUs? Arbitrary value? | Need to clarify. | **Revised****Discussion: The other subfields of the User Info field with AID12 equal to 2046 can be set to any value since the receiver will ignore the content of the RU. Propose to set the other subfields to be reserved.****TGax editor to make changes in 11-18/0076r2 under 12226.** |
| ~~12883~~ | ~~247~~ | ~~43~~ | ~~"The AP shall set the value in the TID Aggregation Limit subfield in the Trigger Dependent User Info field to0 or 1 for an HE STA that has 0 in the Multi-TID Aggregation Support subfield" contradicts "An AP that sends a Basic Trigger frame may set the TID Aggregation Limit subfield of a User Info field thatis intended to a non-AP STA to any value between 0 and the most recently received Multi-TID AggregationSupport subfield": second implies AP must set to 0 if non-AP STA indicated 0, first allows AP to set to 1~~ | ~~Delete "or 1" in the first sentence cited~~ | **~~Revised~~****~~TGax editor to make change in 11-18/0076r2 under 12883~~** |
| 13709 | 246 | 54 | The rules described in this paragraph are especially for the trigger frames in the same MU PPDU. The intention will be more clear if "MU" is added between "same" and "PPDU". | Add "MU" between "same" and "PPDU" where they appear in the paragraph starting from pp.ll 246.54. (3 appearances.) | **Revised****TGax editor to make change in 11-18/0076r2 under 13709** |
| 13716 | 247 | 31 | "An AP may indicate an unassigned RU by using value 2046 in the AID12 subfield." How is it used? It's not explained anywhere in the draft. | Add description how it's used. Or delete the case of including 2046 in the AID12 subfield of the Trigger frame. | **Revised****See the discussion of CID 12226.** **TGax editor to make changes in 11-18/0076r2 under 13716.** |
| 14257 | 246 | 54 | pp245L31 says "If more than one Trigger frame is aggregated in an A-MPDU, all of them shall have the same content." but here says "An AP shall set all the subfields, except the Trigger Type subfield, of the Common Info field of a Trigger frame to the same value of the corresponding subfield of the Common Info field of any other Trigger frame that is carried in the same PPDU." Similar discussion during D1.0 CR concluded "Both sentences are correct. One of them is referring to Trigger frames in an A-MPDU while the other is referring to Trigger frames in a PPDU. A PPDU can carry multiple A-MPDUs. Within an A-MPDU, if there are more than one trigger frame, they shall all have the same content. Each A-MPDU (within a PPDU) could carry different types of trigger frames." If the resolution is intended interpretation, the current texts are still not clear. | Two suggestion.1. Add notes which refers pp245L31.2. Modify last part as follows: any other Trigger frame that is not carried in the same A-MPDU and is carried in the same PPDU. | **Revised****TGax editor to make change in 11-18/0076r2 under 14257** |
| 14318 | 247 | 1 | The statement "HE\_LTF\_TYPE is 4xLTF for 3.2 ++s or 2x LTF for 1.6 ++s" is not valid. The values of "3.2 ++s" and "1.6 ++s" are for "GI\_TYPE". | Change the sentence to the following:"GI and LTF Type is set to 2 if the carrying PPDU TXVECTOR parameters HE\_LTF\_TYPE and GI\_TYPE are either 4x LTF and 3.2 ++s or 2x LTF and 1.6 ++s, respectively; otherwise is set to 1" | **Revised****TGax editor to make change in 11-18/0076r2 under 14318** |

**9.3.1.23 Trigger frame format**

***TGax editor: add the following paragraph at 9.3.1.23(***(#12226, 13716***):***

If the AID12 subfield of a User Info field is 2046, all subfields in the User Info field except the AID12 subfield are reserved.

**27.5.3.2.3 Allowed settings of the Trigger frame fields and UMRS Control field**

***TGax editor: change 27.5.3.2.3 as follows:***

 (#9456)An HE AP shall not send a Trigger frame with User Info fields addressed to STAs from two or more BSSs of a multiple BSSID set to a STA unless the STA has set the Rx Control Frame To MultiBSS subfield in the HE MAC Capabilities Information field of the HE Capabilities element it transmits to 1.(#9456, #3072, 4817, #Ed)

An AP that transmits a Trigger frame shall set the TA field of the frame to the MAC address of the AP, except when dot11MultiBSSIDActivated is true and the Trigger frame is directed to STAs from at least two different BSSs of a multiple BSSID set, in which case, the AP shall set the TA field of the frame to the transmitted BSSID.(#5708, #3071, #5709, #5710, #9709, #5711, #7177)

An AP shall not set any subfields of the Common Info field of a Trigger frame to a value that is not supported by all the recipient STAs of the Trigger frame.

(#14257, 13709) If an AP transmits the Trigger frames in different A-MPDUs in an HE MU PPDU, the AP shall set all the subfields, except the Trigger Type subfield, More TF and CS Required subfield, of the Common Info field of a Trigger frame in one A-MPDU to the same value of the corresponding subfield of the Common Info field of the Trigger frame in any other A-MPDU that is carried in the HE MU PPDU.

(#14257, 13709) If an AP transmits the UMRS Control fields in different A-MPDUs in an HE MU PPDU, the AP shall set the HE TB PPDU Length(#4729) and DL Tx Power subfields of an UMRS Control field to the same value of the corresponding subfield of any UMRS Control field in any other A-MPDU that is carried in the HE MU PPDU.

(#14257, 13709) If an AP transmits the Trigger frames and UMRS Control fields in different A-MPDUs in an HE MU PPDU, the AP shall set the Common Info field of the Trigger frame in any A-MPDU that is carried in the HE MU PPDU as follows:

* the Length subfield in the Trigger frame and HE TB PPDU Length(#4729) field in UMRS Control field indicate the same HE TB PPDU length
* the AP Tx Power subfield in the Trigger frame and DL Tx Power subfields of an UMRS Control field indicate the same transmit power
* MU-MIMO LTF Mode and STBC fields(#Ed) are set to 0
* Number Of HE-LTF Symbols And Midamble Periodicity field is set to 0(17/1275r4)
* Doppler field is set to 0
* Packet Extension field is set to the default PE duration value for UL MU response scheduling, which is indicated by the AP in the Default PE Duration subfield of the HE Operation element it transmits and the pre-FEC padding factor is set to 4
* Spatial Reuse is set to SRP\_AND\_NONSRG\_OBSS-PD\_PROHIBITED(#8057)(#6768)(#9910)
* GI and LTF Type is set to 2(#4825) if the carrying PPDU TXVECTOR parameter HE\_LTF\_TYPE is one of 4x HE-LTF for 12.8 μs with 0.8 μs or 3.2 μs GI and 2x HE-LTF for 6.4 μs with 0.8 μs or 1.6 μs GI(#14318); otherwise is set to 1(#4825, #10312)
* HE-SIG-A Reserved is set to 511 (all 1s)

 the other subfields in the Common Info field are set to any valid value.

NOTE—STAs obtain the common information explicitly, implicitly or both(#6671). Explicit information is obtained in the Common Info field of a Trigger frame, or in the HE TB PPDU Length(#4729) and DL TX Power subfields of the UMRS Control field(#Ed) contained in the soliciting PPDU. Implicit information is obtained in previously exchanged frames with the AP, e.g., in the BSS Color and the Default PE Duration subfields of the HE Operation element, or from default values specified in 27.5.3.3 (STA behavior for UL MU operation).

An AP shall not set any subfields of the User Info field of a Trigger frame to a value that is not supported by the recipient STAs of the User Info field. An AP shall not set any subfields of a UMRS Control field in an HE variant HT Control field to a value that is not supported by the recipient STAs of the UMRS Control field(#8552). When an RU is allocated to only one STA the Starting Spatial Stream subfield for that STA shall be set to 0.(#3015, #3016, #3165, #7487, #8660, #8661, #9262, #9263, #9633)

If a Trigger frame is transmitted in an RU of an HE MU PPDU and the RU is addressed to multiple STAs, then the Trigger frame shall not include any User Info fields addressed to a STA that is identified as recipient of another RU or spatial stream of the same HE MU PPDU.

A UMRS Control field shall not be included in a group addressed MPDU.(#3228)

If an AP transmits one or more Trigger frames or frames carrying a UMRS Control field(#3228, #Ed), then the frames shall collectively elicit HE TB PPDU responses such that at least one scheduled RU is allocated for each 20 MHz channel occupied by the eliciting PPDU. An AP shall not allocate an RU(#6672) in any 20 MHz channel that is not occupied by the immediately preceding DL PPDU. An AP may indicate an unassigned RU by using value 2046 in the AID12 subfield. An AP shall put the User Info fields with AID12 equal to 2046 after any User Info fields with AID12 being less that 2046. (#12226, 13716) A Trigger frame shall not contain more than one User Info field with the same value in the AID12 subfield except when the value of the AID12 subfield is 0, or greater than 2007.(#8298, #8274) When a Trigger frame contains User Info fields with the same value in the AID12 subfield, they shall appear in a contiguous block. When a Trigger frame contains User Info fields with AID12 subfield equal to 0 or greater than 2007, they shall appear after User Info fields with values of AID12 subfield greater than 0 and less than 2008 (if any present).(#5914) When a unicast Trigger frame contains one User Info field, the AID12 subfield of the User Info field shall be set to the 12 LSBs of the AID of the non-AP STA whose MAC address is set in the RA field of the frame.(#9259)

(#11314, 12883)

If an AP doesn’t allow a STA to solicit any immediate response for the MPDUs that the STA aggregates in the HE TB PPDU, the AP shall set the value in the TID Aggregation Limit subfield in the Trigger Dependent User Info field addressed to the STA in Basic Trigger frame to 0.

An AP shall set the value in the TID Aggregation Limit subfield in the Trigger Dependent User Info field addressed to a STA in Basic Trigger frame to 1 if

* (#9831)the AP allows the STA to solicit Ack for the S-MPDU that the STA transmits in the HE TB PPDU, or
* the AP wants the STA to solicit the AP allows the STA to solicit Block Ack for the QoS MPDUs from single TID that the STA transmits in the HE TB PPDU.

An AP shall set the value in the TID Aggregation Limit subfield in the Trigger Dependent User Info field addressed to a STA in Basic Trigger frame to more than 1 if

* the most recently received Multi-TID Aggregation Tx Support subfield of an HE Capabilities element sent by the STA is more than 0,
* the AP allows the STA to transmit multi-TID A-MPDU in the HE TB PPDU (see 27.10.4 (multi-TID A-MPDU and ack-enabled A-MPDU)), and
* the value in the TID Aggregation Limit subfield minus 1 is not more than the value of the most recently received Tx Multi-TID Aggregation Support subfield of an HE Capabilities element sent by the STA.

An AP may set 7 in the TID Aggregation Limit subfield addressed to a STA to indicate that the STA may aggregate QoS Data frames from any number of different TID values in the multi-TID A-MPDU.

(#3018)The AP may assign any value defined in Table 9-25j (Preferred AC subfield encoding) in the Preferred AC subfield in the Trigger Dependent User Info field (#5809)for an HE STA and identified by the AID12 subfield of the User Info field of a Basic Trigger frame. If the AP does not have a recommendation then it shall set the Preferred AC subfield to a value 0(#3225, #7094, 8553, #9527, #9900).(#3018)

An HE AP shall not use the short guard interval for an HT or VHT PPDU that carries a Trigger frame. A Trigger frame shall not be carried in a DSSS or HR/DSSS PPDU. An HE AP shall not use STBC encoding for a PPDU that carries a Trigger frame.(#9773)(#3017, #7954, #9639)(#Ed)