IEEE P802.11  
Wireless LANs

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| **CIDs for: Section 9.3.1.23**  **Trigger Frame RA Address comments and accepted Motion #74, #55** |
| **Date:** 2016-04-17 |

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0.1: Original version

0.2: Changes based on comments from Liwen and resolution from Alfred and Rossi

0.3 Comments from Alfred on Resolutions and added Table header

Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (**14 CIDs**):

* 262,1083
* 102, 612,660, 830,864,1716,2215,2301,2376
* 372,719
* 864

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** | **PP.LL** | | **Comment** | **Proposed Change** | | **Resolution** |
| 102 | Alfred Asterjadhi | 37.62 | RA is part of the Trigger frame so remove this sentence " Whether RA is not part of Trigger frame is TBD." Also clarify the conditions when the RA is unicast and when it is broadcast. | | | As in comment. | Revised as instructed in the document. |
| 262 | Bin Tian | 19.37 | MU Motion #55 on additions to the Trigger frame was approved but no corresponding specification text has been added | | | Add text to include the additions as per the motion | Revised as instructed in this docuemtn (need reference to doc) |
| 372 | Brian Hart | 20.19 | subsequent Trigger frame | | | subsequent Trigger frame in the same TXOP | Revised as intructed in this document. |
| 612 | Geonjung Ko | 19.61 | It is required to describe how to set RA field value. | | | The RA field for the Trigger frame triggering multiple STAs is set to broadcast/multicast address and the RA field for the Trigger frame triggering one STA is set to the STA's MAC address. | Revised Proposed resolution is to clarify the settings for unicast and broadcast which have been extensively discussed in this topic. |
| 660 | Huizhao Wang | 19.61 | Need to specify in what case(s), the RA is not part of Trigger frame | | | Add a table to list out Trigger frame formats | Revised  Proposed resolution clarifies that RA is always present. See instructions below  . |
| 830 | Jinsoo Ahn | 19.61 | RA field of Trigger Frame needs to be determined except for the case of single STA | | | Chage the following (The RA field of the Trigger frame is the address of the recipient STA. Whether RA is not part of Trigger frame is TBD.)'RA field of Trigger Frame shall be set to identical value of TA field(MAC address of AP)' | Rejected.. MAC Motion #55, document ***11-16-0379-00-00ax-trigger-frame-format*** the RA field is always present in the trigger frame format. |
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| 864 | Jun Luo | 21.43 | MAC Motion #74 (RU allocation for each STA in per user info field of Trigger frame) was approved but no corresponding spec text is present in the draft | | | TBD | Revised  Text has been added conceptually inline with the motioned text in MAC motion 74?. |
| 1083 | Kiseon Ryu | 19.39 | Update the Trigger frame format as defined in the latest SFD (v16). | | | Update the Trigger frame format. | Revised.  Agree in principle. Proposed resolution updates the trigger frame format inline with the SFD r16 and other approved motions.  Text has been added. |
| 1716 | Osama Aboulmagd | 19.61 | "The RA field of the Trigger frame is the address of the recipient STA. It is not clear why the AP would trigger a single STA. I believe the RA address should be set to the broadcast address in the same way as in VHT NDPA. | | | as in comment | Rejected  A Trigger frame can be aggregated in an A-MPDU in which case the RA is the address of the sole intended receiver of that A-MPDU. Also there is no technical reason for forbidding a frame to be sent to a single STA in the general case.  For unicast Trigger the RA should be the unicast address. |
| 2215 | Tomoko Adachi | 19.61 | When the Trigger frame is transmitted to multiple STAs, the RA field shall be set to the broadcast address. The RA field should be present in the Trigger frame. | | | Change "The RA field of the Trigger frame is the address of the recipient STA. Whether RA is not part of Trigger frame is TBD." to "When the Trigger frame is sent to a single STA, the RA field is the address of the recipient STA. When the Trigger frame is sent to multiple STAs, the RA field is the broadcast address." | Revised  Agree in principle.  The changes have been made below. |
| 2301 | Yasuhiko Inoue | 19.61 | It has to be determined whether a Trigger frame contains the RA field or not. | | | Please resolve TBDs. | Revised  Proposed resolution resolves these TBDs. |
| 2376 | Yonggang Fang | 17.23 | In order to make backward compatibility, the RA field of Trigger frame should be remained. The RA field could be set to BSSID or the group address of receiving STAs. | | | 1) remove "Whether RA is not part of Trigger frame is TBD" 2) clarify that RA field is set to BSSID or group address of receiving STAs. | Revised  Agree in principle. Proposed resolution accounts for the suggested change.ds. |
| 717 | Jarkko Kneckt | 19.41 | The IFS between Trigger and UL MU PPDU is set to SIFS later in the spec. | | | Change TBD IFS to SIFS. | Accepted. |
| 1755 | Peter Loc | 19.41 | The IFS between a trigger frame and UL HE-triggered transmission is SIFS, not TBD IFS according to 25.5.2.3 STA behavior clause. | | | According to 25.5.2.3, the IFS between a trigger frame and UL transmission is SIFS. Replace the TBD IFS with SIFS | Revised as instructed by CID 717. |
| 719 | Jarkko Kneckt | 20.19 | It is not clear what means that a trigger frame follows the current trigger frame. Does the Trigger frame need to be in the next transmitted DL PPDU or can the collowing be more relaxed? | | | Please clarify what is meant with:"trigger frame follows the current..." | Revised –  Proposed resolution clarifies this ambiguity by adding references to the subclauses where the normative behaviour related to this field setting is defined. |

**TGax Editor: *Add document “11-16-0379-00-00ax-trigger-frame-format” resolution to (#CID):*** ***262,1083***

**TGax Editor: *Add the subclause below as resolution to RA field in Triger frame (#CID):*** ***102, 612,660, 830,864,1716,2215,2301,2376***

#### 9.3.1.23 Trigger frame format

The RA field of the Trigger frame is the address of the recipient STA. If the Trigger Frame has one Per User Info field then the RA of the Trigger Frame is the STA’s MAC Address. If the Trigger Frame has multiple Per User Info field then the RA of the Trigger Frame is set to broadcast. The TA field value is the address of the STA transmitting the Trigger frame.

**TGax Editor: *Add the subclause below as resolution to RA field in Triger frame (#CID):*** ***372,719***

If the Cascade Indication subfield is 1, then a subsequent Trigger frame as defined in 25.7 (TWT operation) and in 25.13.2 (Power save with UL OFDMA-based random access) follows the current Trigger frame. Otherwise the Cascade Indication subfield is 0.

**TGax Editor: *Add the subclause below as resolution to RA field in Triger frame (#CID): 864***

The RU Allocation subfield of the Per User Info field indicates the RU used by the HE trigger-based PPDU of the STA identified by User Identifier subfield. 8 bits are used to signal the RU allocation for each STA in per user info field of Trigger frame.

* The first bit B12 indicates the allocated RU is located in the primary or non-primary 80MHz. (zero for primary and one for non-primary).
* The mapping of the subsequent 7 bits B19-B13 indices to the RU allocation is defined in the table below..



**Table – xxx Mapping of B19-B13 for RU Allocation**

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| --- | --- | --- |
| B19-B13 | Message | Number of entries |
| 0000000 ~ 0100100 | Possible 26 RU cases in 80MHz | 37 |
| 0100101 ~ 0110100 | Possible 52 RU cases in 80MHz | 16 |
| 0110101 ~ 0111100 | Possible 106 RU cases in 80MHz | 8 |
| 0111101 ~ 1000000 | Possible 242 RU cases in 80MHz | 4 |
| 1000001 ~ 1000010 | Possible 484 RU cases in 80MHz | 2 |
| 1000011 | 996 RU cases in 80MHz | 1 |
| 1000100 | 2\*996 RU case | 1 |
| **Total** |  | 69 |

B12 is set to zero for 20/40/80 MHz PPDU. For 2\*996 RU case, B12 is set to one.

The mapping of subsequent 7 bits indices B19-B13 to RU index in each row depends on the BW bits in common info field:

—For 20MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 26-8 in an increasing order. B19-B13 are 0000000 indicates 26-subcarrier RU1 [-121: -96], 0001000 indicates 26-subcarrier RU9 [96: 121], and 0001001~0100100 are not used. B19-B13 are 0100101 indicates 52-subcarrier RU1 [-121: -70], 0101000 indicates 52-subcarrier RU4 [70: 121], and 0101001~0110100 are not used. B19-B13 are 0110101 indicates 106-subcarrier RU1 [-122: -17], 0110110 indicates 106-subcarrier RU2 [17: 122], and 0110111~0111100 are not used. B19-B13 are 0111101 indicates 242-subcarrier RU1 [-122: -2, 2:122], and 0111110~1000000 are not used.

—For 40MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 26-9 in an increasing order. B19-B13 are 0000000 indicates 26-subcarrier RU1 [-243: -218], 0010001 indicates 26-subcarrier RU18 [218: 243], and 0010010~0100100 are not used. B19-B13 are 0100101 indicates 52-subcarrier RU1 [-243: -192], 0101100 indicates 52-subcarrier RU8 [192: 243], and 0101101~0110100 are not used. Similar ordering is followed for 106-subcarrier RU, 242-subcarrier RU and 484-subcarrier RU.

—For 80MHz or 160/80+80MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 26-10 in an increasing order. B19-B13 are 0000000 indicates 26-subcarrier RU1 [-499: -474], and 0100100 indicates 26-subcarrier RU37 [474: 499]. B19-B13 are 0100101 indicates 52-subcarrier RU1 [-499: -448], and 0110100 indicates 52-subcarrier RU16 [448: 499]. Similar ordering is followed for 106-subcarrier RU, 242-subcarrier RU, 484-subcarrier RU and 996-subcarrier RU. For 160/80+80MHz PPDU, B19-B13 are 1000100 indicates 2\*996-subcarrier RU.