### IEEE P802.11Wireless LANs

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| 11ax D1.0 MAC Comment Resolution for 9.3.1.23.4 |
| Date: 2017-01-31 |
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Abstract

This submission proposes resolutions for comments of TGax Draft 1.0 with the following CIDs:

3166, 6086, 6328, 7267, 7272, 7275, 7753, 8396, 9834, 9836, 5682, 7271, 3019, 6329, 9835, 9646, 9647, 8252, 7273, 7274, 7490, 8117, 10342

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Unify the term by using MU-RTS Trigger frame rather than MU-RTS frame.

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 D1.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D1.0 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** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3166 | Ahmadreza Hedayat | 49.28 | 9.3.1.23.4 | This sentence needs more description for the case of a multi-BSSID AP: "NOTE--The TA field value is the address of the STA transmitting the MU-RTS frame." | Describe what address a multi-BSSID AP shall set this value to when the AP addresses STAs from one/several BSS | Revised –Agree in principle with the commenter that the case for multi-BSSID needs to be covered and is not covered in D1.0.However, expect that the setting rule of TA is the same as the rule described in 27.5.2.2.2 Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields. Note that the case for multi-BSSID is well described in 27.5.2.2.2. Hence, we simply refer to 27.5.2.2.2 for the setting rule of TA.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3166. |
| 6086 | Jian Yu | 50.28 | 9.3.1.23.4 | Delete NOTE-- | As in comment | Revised –Agree in principle with the commenter. Expect that the setting rule of TA is the same as the rule described in 27.5.2.2.2 Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields. Hence, we simply refer to 27.5.2.2.2 for the setting rule of TA.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3166. |
| 6328 | John Coffey | 50.28 | 9.3.1.23.4 | Inconsistent usage: here we have "The TA field value is". In many (most?) other places in the draft we have "The TA field is". What distinction is intended between these two forms? If no distinction is intended, the same form should be used. | Delete "value". | Revised –Agree in principle with the commenter. Expect that the setting rule of TA is the same as the rule described in 27.5.2.2.2 Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields. Hence, we simply refer to 27.5.2.2.2 for the setting rule of TA.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3166. |
| 7267 | Kwok Shum Au | 50.28 | 9.3.1.23.4 | The description about the TA field is not a note. It should be a main text. | Change the note to main text for the sentence "The TA field value is the address of the STA transmitting the MU-RTS frame". | Revised –Agree in principle with the commenter. Expect that the setting rule of TA is the same as the rule described in 27.5.2.2.2 Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields. Hence, we simply refer to 27.5.2.2.2 for the setting rule of TA.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3166. |
| 10342 | Oghenekome Oteri | 50.00 | 9.3.1.23 | "NOTE—The TA field value is the address of the STA transmitting the MU-RTS frame.(#2603).": Should add that this is the AP as a non-AP STA will typically not send an MU-RTS frame  | "NOTE—The TA field value is the address of the STA transmitting the MU-RTS frame.(#2603). This shall be an AP STA | Revised –Agree in principle with the commenter. Expect that the setting rule of TA is the same as the rule described in 27.5.2.2.2 Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields. Hence, we simply refer to 27.5.2.2.2 for the setting rule of TA.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3166. |
| 8396 | Po-Kai Huang | 50.43 | 9.3.1.23.4 | Similar to section 9.3.1.23.2, 9.3.1.23.3, 9.3.1.23.5, and 9.3.1.23.7, change the note related to Trigger Dependent Common Info field and Trigger Dependent User Info field to description. | As in comment | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.Also, use the term MU-RTS Trigger frame rather than MU-RTS frame to unify the description based on the discussion with the editor.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 7272 | Kwok Shum Au | 50.43 | 9.3.1.23.4 | The description about the Trigger Dependent Common Info field is not a note. It should be a main text. | Change the note to main text for the sentence "The Trigger Dependent Common Info field is not present in the MU-RTS frame". | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 7275 | Kwok Shum Au | 51.15 | 9.3.1.23.4 | The description about the Trigger Dependent User Info field is not a note. It should be a main text. | Change the note to main text for the sentence "The Trigger Dependent User Info field is not present in the MU-RTS frame". | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 7753 | Mark Hamilton | 50.43 | 9.3.1.23.4 | The NOTES in 9.3.1.23.4 about the Trigger Dependent fields (both are not present) is normative text, and should not be NOTEs. | Change the text at P50L43 and P51L15 to normal (normative) text instead of NOTEs. | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 9834 | Young Hoon Kwon | 50.43 | 9.3.1.23.4 | The sentence "The Trigger Dependent Common Info field is not present in the MU-RTS frame." should not be a note. | Delete "NOTE --" and adjust font size accordingly in line 43. | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 9836 | Young Hoon Kwon | 51.15 | 9.3.1.23.4 | The sentence "The Trigger Dependent User Info field is not present in the MU-RTS frame." should not be a note. | Delete "NOTE --" and adjust font size accordingly in line 15. | Revised –Agree in principle with the commenter. Change the note to description and move it to the appropriate place.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8396. |
| 5682 | Guoqing Li | 50.40 | 9.3.1.23.4 | How to set Doppler field in MU-RTS is not specified | Specify how to set the Doppler field in MU-RTS | Revised –Agree in principle with the commenter. After talking offline, since the signalling is in the MAC header, the field is related to the HE trigger-based PPDU response, putting Doppler field as reserved.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 5682. |
| 7271 | Kwok Shum Au | 50.41 | 9.3.1.23.4 | In the Common Info field, there is a Doppler subfield. There is no description here on wheher the Doppler field is reserved or set to a particular value. | Add the description about the Doppler subfield. | Revised –Agree in principle with the commenter. TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 5682. |
| 7273 | Kwok Shum Au | 50.57 | 9.3.1.23.4 | The description "primary 20 MHz/40 MHz/80 MHz" is not clear. | Replace "primary 20 MHz/40 MHz/80 MHz" with "primary 20 MHz, 40 MHz and 80 MHz channels". | Revised –Agree in principle with the commenter. Only minor revision is made.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 7273. |
| 7274 | Kwok Shum Au | 51.12 | 9.3.1.23.4 | There is no "Bandwidth field" in the User Info field. | Replace "Bandwidth field" with "BW subfield". | Accepted –TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 7274. |
| 8117 | Matthew Fischer | 46.10 | 9.3.1.23 | non-HT format response to a trigger frame (e.g. CTS in response to MU-RTS) currently uses RU allocation information from the trigger that is aligned with HE tone mapping, but the CTS in non-HT format does not use HE tone mapping. Add some language in the draft that instructs the MU-RTS transmitter as to what tones to specify in order to generate the correct CTS response on the correct tone plan, and also language for the trigger recipient to ensure that the correct transmission is elicited. | As stated in the comment | Revised –Agree in principle with the commenter. Description are added to clarify the setting and avoid confusion of different tone plan.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8117. |
| 7490 | Lei Huang | 50.59 | 9.3.1.23.4 | The description "The mapping of B19-B13 to RU Allocation subfield follows the RU index in Table 28-3 (Subcarrier indices for RUs in a 20 MHz HE PPDU) in an increasing order." is not complete and accurate. | replacing"The mapping of B19-B13 to RU Allocation subfield follows the RU index in Table 28-3 (Subcarrier indices for RUs in a 20 MHz HE PPDU) in an increasing order."by"For a 20 MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 28-3 (Subcarrier indices for RUs in a 20 MHz HE PPDU) in an increasing order. For a 40 MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 28-4 (Subcarrier indices for RUs in a 40 MHz HE PPDU) in an increasing order. For an 80 MHz, 160 MHz and 80+80 MHz PPDU, the mapping of B19-B13 to RU allocation follows the RU index in Table 28-5 (Subcarrier indices for RUs in an 80 MHz HE PPDU) in an increasing order." | Revised –Agree in principle with the commenter. Description are added to clarify the setting and avoid confusion of different tone plan.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8117. |
| 9835 | Young Hoon Kwon | 50.57 | 9.3.1.23.4 | As it is already mentioned that The RU Allocation subfield in the User Info field addressed to the STA follows the same definition as described in 9.3.1.23, additional explanation is not necessary. | Delete the paragraph (line 57 - 61). | Rejected –The tone plan of 802.11 ax for OFDMA is new. Specifically, the 242 tone RU tone plan is not exactly the same as the tone plan of non-HT or non-HT duplicate 20MHz transmission. As a result, although the meaning of 242 tone can be mapped to correspond 20MHz allocation of non-HT response, it is still necessary to describe the setting here to avoid confusion.  |
| 9647 | Yongho Seok | 50.64 | 9.3.1.23.4 | "If the BW subfield indicates 20 MHz, then the 242-tone RU entry 0111101 for B19-B13 indicates primary 20 MHz channel....If the Bandwidth field indicates 80+80 MHz or 160 MHz, then the entry 1000100 for B19-B13 indicatesprimary and secondary 80 MHz."The RU Allocation subfield in the MU-RTS frame is independent of BW field.For simplifying it, change it as the following:"The 242-tone RU entry 0111101 for B19-B13 indicates the primary 20 MHz channel.The 484-tone RU entry 1000001 for B19-B13 indicates the primary 40 MHz channel.The 996-tone RU entry 1000011 for B19-B13 indicates the primary 80 MHz channel.The 2x996-tone RU entry 1000100 for B19-B13 indicates the primary 80 MHz channel and secondary 80 MHz channel." | As per comment. | Rejected –The indication of RU Allocation subfield for MU-RTS follows similar indicaiton of other Trigger frame for consistency and unification of design. Since the location of primary 20 MHz channel can be in any 242-tone RU entry if BW indicates bandwidth larger than 20 MHz, fixing a specific 242-tone RU entry for indicating primary 20 MHz then deviates from the design of RU Allocation subfield for other variatnt of Trigger frame. Similar observation exists for the indication of primary 40 MHz channel.The fixed entries used by primary 80 MHz and 160 MHz/80+80 MHz are already in the current spec texts if BW indicates bandwidth larger than 40 MHz.  |
| 9646 | Yongho Seok | 50.57 | 9.3.1.23.4 | "B12 of the RU Allocation subfield is set to 0 for indication of primary 20 MHz/40 MHz/80 MHz. For 160 MHz/80+80 MHz indication, B12 of the RU Allocation subfield is set to 1."B12 is not utilized by a non-AP STA when determining the resonse channel of the CTS.Like to the MCS, Coding Type, DCM, SS Allocation and Target RSSI fields, change it as the following:"B12 of the RU Allocation subfield is reserved." | As per comment. | Rejected –The indication of RU Allocation subfield for MU-RTS follows similar indicaiton of other Trigger frame for consistency and unification of design. According to the description in 9.3.1.23 Trigger frame format,*The first bit, B12, indicates the allocated RU is located in the primary or non-primary 80 MHz (zero for primary and one for non-primary).* Hence, it is true that B12 is always 0 for the indication of primary 20 MHz/40MHz/80MHz. However, it is also described in 9.3.1.23 Trigger frame format that *For the 2×996-tone RU case, B12 is set to 1.*Hence, for the indication of 160 MHz or 80+80 MHz, B12 is still used for the reason of consistency. |
| 6329 | John Coffey | 50.61 | 9.3.1.23.4 | Imprecise language: "in an increasing order". Why "an"? | Delete "an". | Revised –Agree in principle with the commenter. Description are added to clarify the setting and avoid confusion of different tone plan.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 8117. |
| 8252 | Pascal VIGER | 50.51 | 9.3.1.23.4 | Selection of MU-RTS stations:The 802.11ac reservation scheme is conserved (20Mhz, 40Mhz, 80Mhz and so on) even if it is limited.It is better if the AP selects those stations answering a CTS in given channels. As example, two stations reserve a given band, each one in a respective 20 MHz channel: STA A is selected for primary 20MHz, but STA B is selected for the second 20MHz channel.This lets more chance to cover the full band, and avoids collision riskt for simultaneous CTS (synchronization requirement as defined in 17.3.9.10, Pre-correction accuracy requirements). | Modify the description of RU Allocation subfield in the User Info field (line 51 page 50), to support allocation of a given 20MHz RU to specific stations. | Rejected –The proposal of allowing allocation not including primary 20 MHz channel has been discussed in the past. One of the concern from other companies is that for the AP to differentiate if there are no STA responding to MU-RTS or if there is at least one STA responding to MU-RTS, the AP needs to decode the non-HT response in multiple 20 MHz channel simultaneously, which is currently not available in the spec. As a result, only allocation including primary 20 MHz is allowed for MU-RTS. |
| 3019 | Abhishek Patil | 50.49 | 9.3.1.23.4 | The setting of the CS required field is missing in some cases. Specify that the AP should set the CS Required to 1 when transmitting the MU-RTS frame | Insert on P50L47: "The CS Required is set to 1". | Revised –The suggested change has been described in 27.5.2.4 UL MU CS mechanism.We add cooresponding reference.TGax editor to make the changes shown in 11-17/0207r1 under all headings that include CID 3019. |

**Discussion:** *None.*

**Propose:**

Revised for CID 3166, CID 8396, CID 5682, CID 7273, CID 7274, CID 8117, CID 3019 per discussion and editing instructions in 11-17/0207r1.

***TGax editor: Modify 9.3.1.23.4 as the following:***

The MU-RTS Trigger(#8396) frame format is a variant of Trigger frame format as shown in Figure 9-52c (Trigger frame).

The RA field of the MU-RTS Trigger(#8396) frame is set to the broadcast address.

~~NOTE—~~The allowed setting of the TA field is described in 27.5.2.2.2 (Allowed settings of the Trigger frame fields and UL MU Response Scheduling AControl subfields). ~~value is the address of the STA transmitting the MU-RTS frame.~~(#3166)

The Common Info field is defined in Figure 9-52d (Common Info field). The Trigger Dependent Common Info field is not present in the MU-RTS Trigger frame. (#8396)

The Trigger Type subfield is set to 3 to indicate MU-RTS variant.

The setting of CS Required subfield is described in 27.5.2.4 (UL MU CS mechanism).(#3019)

The BW subfield indicates the total PPDU bandwidth, and is defined in Table 9-25b (BW subfield
encoding).

The Length, GI And LTF Type, MU MIMO LTF Mode, Number of LTFs, STBC, LDPC Extra Symbol
Segment, AP TX Power, Packet Extension, Spatial Reuse, Doppler, and HE-SIG-A Reserved subfields are reserved.(#5682)

~~NOTE—The Trigger Dependent Common Info field is not present in the MU-RTS frame.~~ (#8396)

The User Info field is defined in Figure 9-52e (User Info field). The Trigger Dependent User Info field is not present in the MU-RTS Trigger frame.(#8396)

The MCS, Coding Type, DCM, SS Allocation and Target RSSI fields are reserved.

The RU Allocation subfield in the User Info field addressed to the STA follows ~~the same~~similar(#8117) definition as
described in 9.3.1.23 (Trigger frame format) and indicates whether the CTS frame is transmitted on the
primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel, 160 MHz channel, or 80+80
MHz channel.

B12 of the RU Allocation subfield is set to 0 for indication of primary 20 MHz, primary 40 MHz channel, and primary 80 MHz channel~~/40 MHz/80 MHz~~.(#7273) For 160 MHz/80+80 MHz indication, B12 of the RU Allocation subfield is set to 1. ~~The mapping of B19-B13 to RU Allocation subfield follows the RU index in Table 28-3 (Subcarrier indices for RUs in a 20 MHz HE PPDU) in an increasing order.~~(#8117)

If the BW subfield indicates 20 MHz, then the 242-tone RU entry 0111101 for B19-B13 indicate~~s~~ primary 20 MHz channel.

If the BW subfield indicates 40 MHz, then the 242-tone RU entry 0111101 represents the lowest frequency 20 MHz channel, the 242-tone RU entry 0111110 represents the second lowest frequency 20 MHz channel, and (#8117)the 242-tone RU entry for B19-B13 corresponding to the primary 20 MHz channel indicates primary 20 MHz; the 484-tone RU entry 1000001 for B19-B13 indicates the primary 40 MHz channel.

If the BW subfield indicates 80 MHz or 80+80 MHz or 160 MHz, then the 242-tone RU entry 0111101 represents the lowest frequency 20 MHz channel in the primary 80 MHz channel, the 242-tone RU entry 0111110 represents the second lowest frequency 20 MHz channel in the primary 80 MHz channel, the 242-tone RU entry 0111111 represents the third lowest frequency 20 MHz channel in the primary 80 MHz channel, the 242-tone RU entry 1000000 represents the fourth lowest frequency 20 MHz channel in the primary 80 MHz channel, and (#8117)the 242-tone RU entry for B19-B13 corresponding to the primary 20 MHz indicates the primary 20 MHz channel~~,~~; the 484-tone RU entry 1000001 represents the lowest frequency 40 MHz channel in the primary 80 MHz channel, the 484-tone RU entry 1000010 represents the second lowest frequency 40 MHz channel in the primary 80 MHz channel, and (#8117)the 484-tone RU entry for B19-B13 corresponding to the primary 40 MHz indicates the primary 40 MHz channel and the 996-tone RU entry 1000011 for B19-B13 indicates the primary 80 MHz channel.

If the BW~~Bandwidth~~ subfield(#7274) indicates 80+80 MHz or 160 MHz, then the entry 1000100 for B19-B13 indicates primary and secondary 80 MHz.

~~NOTE—The Trigger Dependent User Info field is not present in the MU-RTS frame.~~ (#8396)