IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment resolutions for CIDs on SRS Control |
| Date: 2021-10-01 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| George Cherian | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 |  |  |
| Alfred Asterjadhi | Qualcomm Inc. |  |  |  |
| Abhishek Patil | Qualcomm Inc. |  |  |  |
| Duncan Ho | Qualcomm Inc. |  |  |  |
| Gaurang Naik | Qualcomm Inc. |  |  |  |
| Abdel Karim | Qualcomm Inc. |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGbe D1.0 with the following CIDs (31 CIDs):

* 4139, 4229, 4230, 4231, 4232, 4411, 4480, 4481, 5197, 5198,
* 5231, 5438, 5654, 5824, 5927, 5928, 5995, 5996, 5997, 6380,
* 6381, 6382, 6484, 6560, 6561, 6562, 6688, 6739, 7326, 7807,
* 7808.

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 TGbe Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 4139 | Alfred Asterjadhi | 73.30 | Can this field be set to a value that is less than, for example 24us? I would assume not but there seems to not be any specifics here. Probably a good idea to clarify. | As in comment. | Rejected –The field cannot be set to a value less than 24 us. This particular aspect is already clear in the normative behavior subclause, where it is required for the AP to set the field to a value that is equal to or longer than the maximum of the expected duration of the response PPDUs on all links, and the minimum duration of a PPDU is 24 us. Quoting: *“The STA shall set the PPDU Response Duration subfield of the SRS Control subfield to a value that is equal to or longer than the maximum of the expected duration of the response PPDUs on all links, where the expected duration of the response PPDU is calculated based on the following parameters”.*Hence, no further clarifications are needed. |
| 4229 | Alfred Asterjadhi | 278.24 | Description of the SRS Control field behavior deserves its own subclause since it is an optional feature. Create it as a dependedn subclause of this one. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 4229. |
| 4230 | Alfred Asterjadhi | 278.29 | Replace "one or more" with "an". Here and the next paragraph. Also I would guess that the non-AP STA can only transmit a PPDU that carries the SRS control field only if it is the TXOP owner (since it governs the length of the PPDU carrying the control response frame). So add another statement to say that the STA shall not transmit this type of PPDU unless it is the TXOP owner. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes. However, since a STA can exchange frames during TXOPs obtained as part of SU TXS sharing procedure then this would still be possible. The case that can’t happen is that of a STA including the SRS Control field in an MPDU that is carried in a TB PPDU since the AP decides the control response frame on its own (based on how many STAs are responding with TB PPDU and so on). Proposed resolution clarifies this aspect, wich is inline with the proposed change for CID 5927 as well.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 4230. |
| 4231 | Alfred Asterjadhi | 278.39 | This sentence is too long. Suggest splitting it so that it reads better (or remove redundancies). | As in comment. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes. In particular tried to simplify and described the concept in a more concise manner.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 4231. |
| 4232 | Alfred Asterjadhi | 279.04 | Need to explicitly call out whether these are the only two PPDU formats or not. At least means that there might be others. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution explicitly clarifies that the calculation of the expected PPDU is either HE SU or EHT MU PPDU, while the selection at the responding side is essentially whichever fits.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 4232. |
| 4411 | Arik Klein | 278.28 | Need to specify that the non-AP STA is affiliated with NSTR non-AP MLD in the following sentence: "A non-AP STA shall not transmit a PPDU carrying one or more MPDUs with SRS Control subfield to an AP..." | Revise the sentence as follows:"A non-AP STA \*affiliated with NSTR non-AP MLD\* shall not transmit a PPDU carrying one or more MPDUs with SRS Control subfield to an AP..." | Accepted |
| 4480 | Arik Klein | 278.30 | Add "s" to the word equal in the following sentence "A non-AP STA shall not transmit a PPDU carrying one or more MPDUs with SRS Control subfield to an APunless it has received from the AP a Basic variant Multi-Link element with the SRS Support subfield equal to 1." | The corrected sentence shall be "A non-AP STA shall not transmit a PPDU carrying one or more MPDUs with SRS Control subfield to an APunless it has received from the AP a Basic variant Multi-Link element with the SRS Support subfield \*equals\* to 1." | Rejected –The current text is grammatically correct. Same wording is used extensively throughout various amendments and baseline.  |
| 4481 | Arik Klein | 278.39 | typo - replace "are" with "is" in the following sentence " When more than one STA that \*are\* affiliated with the same NSTR non-AP MLD ..." | Option 1: As in commentOption 2: Revise the sentence as follows "When one or more STAs that are affiliated with the same NSTR non-AP MLD..." | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes. In particular tried to simplify and described the concept in a more concise manner.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 4481. |
| 5197 | Hanqing Lou | 73.10 | Do we have definition of non-TB PPDU? | Suggest to change to "the PPDU which is not responding a Trigger frame" or defined non-TB PPDU explicitly somewhere | Revised –Agree in principle with the comment. Proposed resolution is to add the following definition: “non-Trigger-based (non-TB) physical layer (PHY) protocol data unit (PPDU): A PPDU that is not transmitted with high efficiency (HE) TB PPDU or extremely high throughput (EHT) TB PPDU format.”Note to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 6530. Hence no further changes are required to the draft. |
| 5198 | Hanqing Lou | 73.27 | Do we have definition of non-TB PPDU? | Suggest to change to "the PPDU which is not responding a Trigger frame" or defined non-TB PPDU explicitly somewhere | Revised –Agree in principle with the comment. Proposed resolution is to add the following definition: “non-Trigger-based (non-TB) physical layer (PHY) protocol data unit (PPDU): A PPDU that is not transmitted with high efficiency (HE) TB PPDU or extremely high throughput (EHT) TB PPDU format.”Note to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 6530. Hence no further changes are required to the draft. |
| 5231 | Ilya Levitsky | 72.31 | spatia => spatial | As in comment | AcceptedNote to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 8064. Hence no further changes are required to the draft. |
| 5438 | Jian Yu | 43.57 | single response scheuling should be SRS | Change to SRS | Revised –Agree with comment. TGbe Editor: Replace SRE with SRS in the cited location (p43l57).Note: Not shown in the text below (part of abbreviations and acronyms). |
| 5654 | Joseph Levy | 43.59 | SRE is not SRS (single response scheduling). SRE in not used in the specification. SRS is used in the specification but is only used as a name for a subfield the SRS support and SRS control subfield. Hence, there is no need to have SRS defined as an abbreviation or acronym. | Delete the abbreviation: "SRE single response scheduling". | Revised –Agree with the first part of the comment comment. Since this term is used several times throughout the draft and because all these Control fields are defined via acronymos proposal is to keep the abbreviation. TGbe Editor: Replace SRE with SRS in the cited location (p43l57).Note: Not shown in the text below (part of abbreviations and acronyms). |
| 5824 | Lei Wang | 43.57 | "SRE single response scheduling" where "E" comes from? Should it be "S" instead? | Change SRE to SRS. | Revised –Agree with the first part of the comment comment. Since this term is used several times throughout the draft and because all these Control fields are defined via acronymos proposal is to keep the abbreviation. TGbe Editor: Replace SRE with SRS in the cited location (p43l57).Note: Not shown in the text below (part of abbreviations and acronyms). |
| 5927 | Li-Hsiang Sun | 278.39 | "When more than one STA that are affiliated with the same NSTR non-AP MLD simultaneously transmit a PPDU to their peer APs ..."The PPDU carrying SRS control should not be a TB-PPDU with multiple transmitters | Calrify the PPDU carrying SRS is not a TB-PPDU | Revised –Agree in principle with the comment. Proposed resolution clarifies this aspect by calling out that this is excluded. TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 5927. |
| 5928 | Li-Hsiang Sun | 278.59 | "A PSDU length that is equal to or greater than the length of a Multi-STA BlockAck frame with thenegotiated BlockAck bitmap size(s)."It is allowed to have BA with shorter bitmap size than negotiated size. Since the transmitter of SRS control knows how many MPDUs sent on each link, it should be able to setup a duration with a shorter bitmap size | delete this bullet | Revised –Agree in principle with the comment. Proposed resolution clarifies this aspect inline with the suggestion.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 5928. |
| 5995 | Liwen Chu | 278.59 | The BA selection (Compressed BA or multi-STA BA) should be based on the the soliciting A-MPDU type (single TID or multi-TID A-MPDU). | As in comment | Revised –Agree in principle with the comment. Proposed resolution clarifies this aspect inline with the suggestion.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 5995. |
| 5996 | Liwen Chu | 278.49 | the solicited PPDU type should be same as the solicting PPDU unless the solicited PPDU type is neither HE nor EHT MU in which case the EHT PPDU is used to carry the solicited PPDU | As in comment | Rejected –These control frames are generated by the AP which has a better understanding of the surrounding environment (i.e., what types of devices operate in the area). Hence, subject to satisfying the duration solicited by the STA, the AP can chose whichever PPDU format it sees fit (e.g., HE PPDU if majority of devices is HE, EHT PPDU if majority of devices is EHT, etc. This way these devices can correctly decode the PPDU containing the control response frame, hence setting the NAV and so on.  |
| 5997 | Liwen Chu | 278.56 | the correct lause for selecting EHT MCS rules should be selected. | As in comment | Revised –Agree in principle with the comment. Proposed resolution clarifies this aspect by calling out the subclause where these extra rules are expected to be defined.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 5997. |
| 6380 | Morteza Mehrnoush | 73.29 | The accurate reference for setting the PPDU Response duration should be "35.3.14.5 PPDU end time alignment" instead of "35.3.14 Multi-link channel access". | as in comment | Revised –Agree in principle with the comment. Proposed resolution fixes the reference by using the newly defined reference on subclause 35.3.15.5.2 (End time alignment of response PPDUs using SRS Control field). The same was done for the reference in the first paragraph of this subclause.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 6380. |
| 6381 | Morteza Mehrnoush | 279.09 | In Note-6 it says "if the PPDU carrying the response is an HE SU PPDU or an EHT MU PPDU addressed to one non-AP STA,..."; is there any scenario where the PPDU carrying the response is not HE SU PPDU or EHT MU PPDU?If there is no other scenario, please remove the "if" condition in Note-6 and rewrite the sentense;if there are other scenarios, please add text and clarify how the padding for those scenarios (except response as HE SU PPDU or EHT MU PPDU) should be calculated. | as in comment | Revised –These PPDUs are the only formats that can carru aggregated MPDUs, reason for which this condition exists. However to explicitly call out all possible PPDU formats the proposed resolution is similar to that of CID 4242 where we specify that the only other PPDU format that can be used is non-HT (duplicate) PPDU, which does not actually carry A-MPDUs, hence needing no changes to note 6 anyways.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 6381. |
| 6382 | Morteza Mehrnoush | 279.06 | The table number is wrong. It should be Table 9-532. | as in comment | Rejected –The table number is correct. Table 9-532 in 802.11-2020 is A-MPDU contents in PSMP context. The one we need is 9-533 which is A-MPDU contents in the control response context. |
| 6484 | Osama Aboulmagd | 73.12 | Is there a definition for non-TB PPDU? | If non-TB PPDU means all other PPDU types then it is better to spell out all these types. | Revised –Agree in principle with the comment. Proposed resolution is to add the following definition: “non-Trigger-based (non-TB) physical layer (PHY) protocol data unit (PPDU): A PPDU that is not transmitted with high efficiency (HE) TB PPDU or extremely high throughput (EHT) TB PPDU format.”Note to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 6530. Hence no further changes are required to the draft. |
| 6560 | Patrice Nezou | 73.27 | The non-TB PPDU is a unknown PPDU. Even if it is understandable, the HE and EHT TB PPDU are allowed to be transmitted during a Multi link transmission. | Please specify the appropriate PPDU format. | Revised –Agree in principle with the comment. Proposed resolution is to add the following definition: “non-Trigger-based (non-TB) physical layer (PHY) protocol data unit (PPDU): A PPDU that is not transmitted with high efficiency (HE) TB PPDU or extremely high throughput (EHT) TB PPDU format.”Note to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 6530. Hence no further changes are required to the draft. |
| 6561 | Patrice Nezou | 73.27 | The HE and EHT TB PPDU are allowed to be transmitted during a Multi link transmission. Please replace "The PPDU Response Duration subfield contains the duration of the solicited non-TB PPDU ... " to "The PPDU Response Duration subfield contains the duration of the solicited PPDUs ..." | As in comment | Rejected –Only APs can transmit PPDUs in response to SRS Control fields contained in MPDUs. And APs cannot transmit TB PPDUs. Hence the current text is correct. |
| 6562 | Patrice Nezou | 278.49 | The usage of the SRS control subfield should be extended to other PPDU formats, instead of limited to HE SU PPDU and EHT MU PPDU. | Please replace "PPDU format that includes HE SU PPDU, or EHT MU PPDU" to "PPDU format that includes HE SU PPDU, or any EHT PPDU" | Revised –The current text is very generic (allowing all other types of formats) and leads to ambiguity in this aspect. Proposed resolution is to call out that legacy format (non-HT (dup) PPDUs) can be used. That way it is clear that there are only three possibilities rather than leaving it open to any PPDU format.  TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 6562. |
| 6688 | Rojan Chitrakar | 43.57 | Why SRE and not SRS? SRS would appear to be more natural acronym for Single Response Scheduling. Also this seems to be the only occurrence of SRE in D1.0, is the acronym really needed? Also the related A-Control field is called SRS Control. | Change SRE to SRS if the acronym is really needed | Revised –Agree with comment. The SRE occurs only once because it is a typo. The actual term SRS appears 28 times and hence having an acronym is beneficial. TGbe Editor: Replace SRE with SRS in the cited location (p43l57).Note: Not shown in the text below (part of abbreviations and acronyms). |
| 6739 | Rojan Chitrakar | 279.01 | "Have the duration of the PPDU to be equal to the duration that is specified in the PPDU Response Duration subfield of the soliciting SRS Control subfield." What if the AP is not able to meet the specified duration requirement for any reason? | Add text to describe what is the AP's action if the AP is not able to meet the specified duration requirement for any reason | Rejected –The requirements are written in such a way to guarantee that the AP is able to meet the specified requirements. Please refer to the requirements set at the STA side which is required to guarantee that the duration is greater than or equal to the maximum expected duration of the response PPDUs in all links.  |
| 7326 | stephane baron | 73.11 | non-TB PPDU has no definition, please add a defitnition | add a definition in chapter 3.2 for the non-TB PPDU | Revised –Agree in principle with the comment. Proposed resolution is to add the following definition: “non-Trigger-based (non-TB) physical layer (PHY) protocol data unit (PPDU): A PPDU that is not transmitted with high efficiency (HE) TB PPDU or extremely high throughput (EHT) TB PPDU format.”Note to TGbe Editor: This change is already present in the D1.2 and was added as part of resolution for CID 6530. Hence no further changes are required to the draft. |
| 7807 | Yiqing Li | 278.42 | "solicit" should be "soliciting" | As commented. | Revised –The verb “solicit” in that location is grammatically correct, however due to the length of the sentence it lead to some ambiguities. Proposed resolution is to simplify and clarify this particular sentence which should help. TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 7807. |
| 7808 | Yiqing Li | 278.43 | "PPDU end time of PPDUs" should be "end time of the PPDUs" | As commented. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGbe editor to make the changes shown in 11-21/1610r0 under all headings that include CID 7808. |

**Discussion: *See proposed resolution columns.***

**9.2.4.6a.9 SRS Control**

**TGbe Editor: *Change the paragraph below of this subclause as follows (#CID 6380):***

The Control Information subfield in an SRS Control subfield contains scheduling information for the non-TB PPDU containing the control response to the PPDU carrying the MPDU(s) containing the SRS Controlsubfield (see 35.3.15.5.2 (End time alignment of response PPDUs using SRS Control field)). The format of the subfield is shown in [Figure 9-22j](file:///C%3A%5CUsers%5Caasterja%5CAppData%5CLocal%5CTemp%5CTemp1_Draft%20P802.11be_D1.2%20-%20Word.zip%5CTGbe_Cl_09.doc#bookmark7)[(Control Information subfield format in an SRS Control subfield)](file:///C%3A%5CUsers%5Caasterja%5CAppData%5CLocal%5CTemp%5CTemp1_Draft%20P802.11be_D1.2%20-%20Word.zip%5CTGbe_Cl_09.doc#bookmark7).*(#6380)*

 B0 B7 B8 B9

Reserved

PPDU Response Duration

Bits: 8 2

**Figure 9-22j—Control Information subfield format in an SRS Control subfield**

**TGbe Editor: *Change the paragraph below of this subclause as follows (#CID 6380):***

The PPDU Response Duration subfield contains the duration of the solicited non-TB PPDU that carries the control response frame that immediately follows the PPDU carrying the SRS Control subfield. The PPDU Response Duration subfield is in units of 4 microseconds and is set as defined in 35.3.15.5.2 (End time alignment of response PPDUs using SRS Control field)).*(#6380)*

**35.3.15.5 PPDU end time alignment**

**TGbe Editor: *Insert a new subclause heading as shown below (#CID 4229):***

**35.3.15.5.1 General***(#4229)*

In this subclause “simultaneously transmit” means more than one PPDU is transmitted on more than one

link, where each PPDU is transmitted over one link, and those transmissions overlap in time. Likewise,

“simultaneously trigger” means more than one HE or EHT TB PPDU is triggered on more than one link,

where each PPDU is triggered over one link, and those transmissions overlap in time. If (#7555)an NSTR

MLD that is receiving a PPDU on a first link simultaneously transmits another PPDU on a second link, then

the NSTR MLD might fail to receive the PPDU on the first link because of the interference caused by its

transmission on the second link. This subclause specifies a mechanism to align the end time of PPDUs that

are simultaneously transmitted to the same NSTR non-AP MLD, which helps reduce the chances of the

occurrence of such self-interference among STAs affiliated to the same NSTR MLD.

…



 **Figure 35-15—PPDU end time alignment timing relationships**

**TGbe Editor: *Insert a new subclause heading as shown below (#CID 4229):***

**35.3.15.5.2 End time alignment of response PPDUs using SRS Control field***(#4229)*

An AP that is affiliated with an AP MLD shall set the SRS Support subfield in the Common Info field of the Basic Multi-Link element it transmits to 1 if its dot11SRSOptionImplemented is true; otherwise the AP shall set it to 0.

**TGbe Editor: *Change the paragraphs below of this subclause as follows (#CID 4230, 4411, 5927):***

A non-AP STA affiliated with an NSTR non-AP MLD shall not transmit a PPDU carrying an MPDU with SRS Control subfield to an AP unless the STA has received from the AP a (#6700)Basic Multi-Link element with the SRS Support subfield equal to 1. A non-AP STA shall not transmit a TB PPDU carrying an MPDU with SRS Control subfield.*(#4230, 4411, 5927)*

An AP shall not transmit a PPDU carrying an MPDU with SRS Control subfield to a STA.*(#4230)*

NOTE 5—If the received SRS Support subfield from an AP is equal to 0, a non-AP STA might not be able to perform multiple frame transmission in a TXOP over NSTR link pair(s) with the AP, unless the expected duration of solicited PPDU transmitted on NSTR link pair(s) are the same.

**TGbe Editor: *Change the paragraph below of this subclause as follows (#CID 4231, 4232, 4481, 5997, 7807, 7808, 5928, 5995):***

IfSTAs affiliated with an NSTR non-AP MLD simultaneously transmit PPDUs to the respective APs affiliated with an AP MLD that has dot11SRSOptionImplemented equal to true, the transmitted PPDUs solicit control response frames and the NSTR non-AP MLD intends to align the end times of the PPDUs sent in response by the peer APs, then at least one of the PPDUs soliciting a control response frame shall carry an MPDU with SRS Control subfield. The STA shall set the PPDU Response Duration subfield of the SRS Control subfield to a value that is equal to or longer than the maximum of the expected duration of the response PPDUs on all links, where the expected duration of the response PPDU is calculated based on the following parameters:*(#4231, 4481, 7807, 7808)*

* PPDU format that is HE SU PPDU, or EHT MU PPDU addressed to a single STA,*(#4232)*
* Bandwidth that is equal to the bandwidth of the soliciting PPDU,
* NSS and number of LTFs that are equal to one,
* GI that is equal to the longest mandatory GI value (3.2 µs),
* MCS that is selected following the rate selection rules defined in 10.6.6.5 (Rate selection for control response frames), 26.17.1 (Basic HE BSS operation), 26.15.3 (MCS, NSS, BW and DCM selection), [35.13 (EHT BSS operation)](#bookmark84), and 35.12 (PPDU format, BW, MCS, NSS, and DCM selection rules)*(#5997)*
* A PSDU length that is equal to or greater than the length of the Multi-STA BlockAck frame expected in response to the soliciting PPDU.*(#5995, 5928)*

**TGbe Editor: *Change the paragraph below of this subclause as follows (#CID 4232, 6381, 6562):***

An EHT AP affiliated with an AP MLD that transmits a PPDU in response to a frame containing an SRS Control subfield shall:

* Have the duration of the PPDU to be equal to the duration that is specified in the PPDU Response Duration subfield of the soliciting SRS Control subfield.
* Use a non-HT (dup) PPDU, or HE SU PPDU,or an EHT MU PPDU format addressed to a single STA. If the PSDU carried in the response PPDU contains an A-MPDU then the contents of the A-MPDU shall be as defined in Table 9-533 (A-MPDU contents in the control response context).*(#4232, 6381, 6562)*

NOTE 6—If the PPDU carrying the response is an HE SU PPDU or an EHT MU PPDU addressed to one non-AP STA, then the AP might use any type of padding to ensure that the duration of the PPDU is equal to the duration that is specified in the PPDU Response Duration subfield of the soliciting SRS Control subfield.