IEEE P802.11  
Wireless LANs

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Abstract

This submission proposes resolutions for comments related to TGba D2.1 with the following CIDs (17 CIDs):

* 2041, 2042, 2170, 2171, 2201, 2393, 2400, 2463, 2512, 2570, 2687, 2688, 2690, 2740, 2781, 2782, 2815

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Modification based on the offline discussions
* Rev 2: Modification based on the discussions

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

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

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2570 | Robert Stacey | 63.63 | Implicit in frame processing is that a frame is not received until the FCS validates. If the FCS does not validate then the frame has not been received. Since this is low level MAC behavior, rewrite the requirement so that it refers to the primitive exhange between the MAC and the PHY. | Change to "The MAC of a WUR STA that receives a PHY-RXSTART.indication for a WUR PPDU may issue a PHY-CCARESET.request primitive if the data received from the PHY does not correspond to an expected WUR frame." | REVISED  Agree in principle with the comment.  The decision of early discarding happens before the STA receives the whole WUR PPDU.  The normative behavior for early discarding of WUR frame must be rewritten in the level of lower MAC and PHY interfacing.  The proposed resolution is to incorporate the proposed change of the comment.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2570. |
| 2041 | Alfred Asterjadhi | 63.54 | The earlier the STA discards the frame the better is (increases the likelyhood to synch to the right packet, think of overlapping WUR PPDUs). Hence this has to be at least a recommendation "should" if a "shall" is deemed too strong. Also it is not clear what the CCARESET.request issuance is performing. Please clarify perhaps with a note. | As in comment. | REVISED  Agree in principle with the comment.  Considering the long airtime WUR frame and limited on duration of duty-cycle operation, it should be avoided that a WUR non-AP STA is captured by an unintended frame.  Unlike conventional 802.11 frames, a WUR frame does not have any necessary information for a WUR STA (e.g., NAV) if the frame is not intended for it.  Furthermore, after discarding a WUR frame, the WUR STA won’t make any negative effect on the network since it cannot transmit a frame in doze state.  Therefore, early discarding behavior should be recommended in spec-wise.  Please note that the CCARESET.request issuance is used when the MAC request the PHY to terminate the reception before the end of the PPDU and is already applied in previous amendments for the same purpose (e.g., spatial reuse operation in 11ax).  The proposed resoltion is to reword the cited text with “should” statement, and to add a note that clarifies the purpose of the CCARESET issuance.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2041. |
| 2688 | Woojin Ahn | 63.54 | If a received frame is not intended to a STA and does not contain any necessary information, the MAC shall discard the frame. In addition, a WUR non-AP STA can discard an unintended frame earlier for other benefits. | Need more clarification. Change 'may' to 'shall, or add more clarification on the timing of frame discarding | REVISED  Agree in principle with the comment.  Considering the long airtime WUR frame and limited on duration of duty-cycle operation, it should be avoided that a WUR non-AP STA is captured by an unintended frame. The early discarding behavior should be recommended in spec-wise.  Also, early discarding happens in the middle of WUR PPDU reception. To clarify this, the text can be rewritten in the level of lower MAC and PHY interfacing.  The proposed resoltion is to reword the cited text with “should” statement  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2688. |
| 2782 | Yongho Seok | 63.64 | "When a WUR non-AP STA discards a WUR frame before processing the FCS field, a PHY-CCARESET.request primitive may be issued." This is a totally implementation issue. A legacy STA also may do the same thing but the baseline spec does not have this sentence because it is an implementation issue. | Remove the cited sentence. | REJECTED  In the baseline, a STA is not supposed to issue a PHY-CCARESET.request in the middle of a PPDU even if the data included in the PPDU is not intended for it, because the STA must protect the NAV. As an exception, the spatial reuse operation in 11ax allows a STA to issue a PHY-CCARESET in the middle of a PPDU only under limited conditions.  Therefore, the issuance of a PHY-CCARESET is not an implementation specific and the task group has agreed on that the early discarding would benefit for WUR STA, considering the long air time of WUR frame. |
| 2393 | Mark Hamilton | 63.63 | A receiving WUR (non-AP) STA needs to wait for the end of the WUR frame before resetting CCA. Otherwise, it can start to transmit a short time later, potentially while the WUR frame is still on the air. Add appropriate instructions for the receiving STA to presume the length from the Length subfield or determine the frame is FL and use the fixed length, determine the data rate, and to determine the frame duration by calculating from these, and do a PHY-CCARESET.request only after that time has expired. This is no worse than today's assumption of frame length on PHY CRC failure in existing PHYs. | As in coment. | REVISED  Agree in principle.  If a WUR STA is in WUR Mode, the STA is expected to be in the doze state most of the time. In this case, the STA is not able to transmit anything regardless of the CCARESET.request.  Meanwhile, if a WUR STA is in the awake state, the CCARESET.request issuance might cause a potential frame transmission of the STA that interferes the ongoinig WUR PPDU transmission.  For simplicity, we propose that WUR STA issues the CCARESET.request only when it is in the doze state.  The proposed resolution is to clarify that a WUR non-AP STA issues the CCARESET.request only when it is in the doze state.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2393. |
| 2690 | Woojin Ahn | 63.63 | When the MAC decides to discard a receiving frame earlier, there is no technical reason for the PHY to continue receiving. It contradicts the purpose of early discarding | Change 'may' to 'shall' | REVISED  Agree in principle with the comment.  The benefits of early discarding cannot be achieved unless the PHY of a non-AP STA terminates the reception of the WUR PPDU.  The cited behavior needs to be more recommended.  The proposed resoltion is to reword the cited text with “should” statement  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2690. |
| 2042 | Alfred Asterjadhi | 63.54 | This list is not exhaustive. We need to add the other cases (e.g., unsupported rate, etc). Refer to the CID 1175 and the resolution that was proposed in 11-18/1835r3. Also please ensure that parsing of the frames is forward compatible (i.e., similar to baseline behaviors, e.g., STA ignores reserved values and so on) | As in comment. | REVISED  Agree in principle with the comment. An WUR non-AP STA can discard frame if the received frame is not supported by the STA or does not contain any of its assigned identifieres. Also, WUR STA must be able to parse the remainder of a receiving frame when it encounters a reserved field.  The proposed resoltion is to add other conditions for early discarding of WUR frame. Also, an instruction for a reserved field is added as a note.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2042 |
| 2170 | Jeongki Kim | 63.54 | STA can discard a received VL WUR Wake-up frame for other conditions: for example, ID field does not match one of the assigned WUR Group IDs | Add the other conditions for discarding a received VL WUR Wake-up frame. | REVISED  Agree in principle with the comment. An WUR non-AP STA can discard frame if the received frame is not supported by the STA or does not contain any of its assigned identifieres.  The proposed resoltion is to add other conditions for early discarding of WUR frame.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2170. |
| 2687 | Woojin Ahn | 63.51 | Other than VL Wake-up frame, there are other conditions on which a WUR non-AP can discard a received WUR frame earlier. Early discarding is a unique operation of WUR and it is important for a WUR non-AP STA in terms of power saving and preventing STA from captured by unintended frame. | List other conditions for WUR frame early discarding, such as: -- The Type subfield indicates a value that is not supported by the WUR STA -- The Length Present subfield indicates a value that is not supported by the WUR STA -- The Protected subfield indicates a value that is not supported by the WUR STA -- The ID subfield indicates a value that is not recognized by or is unknown to the WUR STA | REVISED  Agree in principle with the comment. An WUR non-AP STA can discard frame if the received frame is not supported by the STA or does not contain any of its assigned identifieres.  The proposed resoltion is to add other conditions for early discarding of WUR frame.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2687. |
| 2815 | Yunsong Yang | 63.54 | There are many other reasons that a non-AP STA may discard a VL WUR Wake-up frame, for examples, the STA doesn't support VL WUR frames, the group ID doesn't match any group ID assigned to the STA, or the STA doesn't support HDR that is used on the VL WUR Wake-up frame. | List all the events, in which the non-AP STA may discard a received VL WUR Wake-up frame, including the examples given in this comment. | REVISED  Agree in principle with the comment. An WUR non-AP STA can discard frame if the received frame is not supported by the STA or does not contain any of its assigned identifieres.  And please note that, if a WUR STA does not support HDR, the SYNC field won’t be detected by the STA.  The proposed resoltion is to add other conditions for early discarding of WUR frame.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2815. |
| 2781 | Yongho Seok | 63.54 | "A WUR non-AP STA may discard a received VL WUR Wake-up frame when any of the following events occur:..." The discarding conditions just covers a few scenarios. The spec just needs a normative text. | Delete 30.3 or change to the normative text. | REVISED  Agree in principle with the comment.  An WUR non-AP STA can also discard frame if the received frame is not supported by the STA or does not contain any of its assigned identifieres.  Also, as per the proposed resolution of CID 2042, 2570, 2687 and 2815, the referred subcluase provides general requirements and normative text for WUR frame processing.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2781. |
| 2740 | Xiaofei Wang | 63.61 | what if a VL WUR wake-up frame is received when the group ID included in the ID field is not recognized? In that case, a non-AP STA should be able to discard the VL WUR wake up frame as well? | add the additional condition at L62 | REVISED  Agree in principle with the comment. An WUR non-AP STA can discard frame if the ID field does not indicate any of its assigned identifieres.  The proposed resoltion is to add the condition for early discarding of WUR frame.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2740. |
| 2201 | Joseph Levy | 63.57 | The way the events are described is very cryptic, simply state that a WUR non-AP STA may discard a WUR Wake-up frame that does not contain it's WUR ID or a WUR group ID of a group that it is a member of. A note may be added to inform the reader that WUR IDs are provided in WUR Wake-up frames provide WUR IDs in increasing WUR ID numerical order, so that a WUR non-AP STA may discard the frame once a WUR ID greater than any of its defined WUR IDs is found. Also it might be useful to indicate that a WUR Wake-up frame is a WUR frame with the Type element of the Frame control field set to 1. | As in comment. | REJECTED  If a WUR STA is receiving a VL WUR Wake-up frame and the frame is from an OBSS AP, the STA can be stuck upto 2msec. It is a great loss if a WUR STA with duty-cycle operation misses an intended WUR frame because of an OBSS WUR frame. Therefore, the spec should recommend early discarding behavior especially for VL WUR Wake-up frame case.  The cited text instructs WUR STA to discard an unintended VL WUR Wake-up frame as early as possible and defines the earliest instant that the STA can discard it.  The proposed resolution is to keep the current structure. |
| 2400 | Mark RISON | 63.56 | "A WUR ID field in the Frame Body field is greater than the WUR ID assigned to the WUR non-AP STA and has no WUR ID equal to the WUR ID assigned to the WUR non-AP STA identified prior to it," -- extremely confusing wording | Change the first para and the bullets of the referenced subclause to "A WUR non-AP STA may discard a received VL WUR Wake-up frame, before processing the FCS field, following reception of a WUR ID field that is greater than the WUR ID assigned to the WUR non-AP STA." | REVISED  Agree in principle with the comment.  The proposed resolution is to repharse the cited sentence for better clarification.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2400. |
| 2463 | Minyoung Park | 63.57 | The "WUR ID field" in the sentence should be clarified as "WUR ID field of a STA Info field" and "it" in the first bulletpoint should be replaced with "the WUR ID field of a STA Info field" and "it" in the second bulletpoint should be replaced with "the WUR non-AP STA". | As shown in the comment | REVISED  Agree in principle. The proposed resolution is to repharse the cited sentence for better clarification.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2463. |
| 2512 | Osama Aboulmagd | 64.61 | The sentence "The last WUR ID field in the Frame Body field" doesn't seem to make sense. Is WUR ID field is part of the frame body!!! Additionally what does "last" mean. | correct the bullet to reflect the real purpose. | REVISED  Agree in principle with the comment.  If a WUR frame is a VL WUR Wake-up frame, the Frame Body field can contain multiple STA Info field, and each of the STA Info field contains a WUR ID field.  The proposed resolution is to repharse the cited sentence for better clarification.  TGba editor to make the changes shown in 11-19/0802r2 under all headings that include CID 2512. |
| 2171 | Jeongki Kim | 63.54 | The texts in subclause 30.3 are about WUR non-AP STA only which supports VL WUR Wake-up frame. | Change to "A WUR non-AP STA supporting reception of VL WUR Wake-up frame may ..." | REJECTED  The referred subclause is applied for both FL and VL WUR Wake-up frame. |

**Discussion: None**

**TGba Editor: *Change the subclause as follows (#CID 2041, 2042, 2170, 2393, 2400, 2463, 2512, 2570, 2687, 2688, 2690, 2740, 2781, 2815):***

* WUR frame processing

*(2041, 2570, 2688, 2781)(2400, 2463, 2512)* *(2393, 2570, 2688, 2690)*

If the PHY of a WUR non-AP STA issues a PHY-RXSTART.indication due to a WUR PPDU reception, then the MAC sublayer of the WUR non-AP STA should issue a PHY-CCARESET.request primitive before the end of the WUR PPDU if the WUR non-AP STA is in the doze state *(2393)*, and the data transferred from the PHY contains any of the followings: *(2041, 2570, 2688, 2690, 2781)*

* The Type subfield of a WUR frame with a value that is not supported by the WUR non-AP STA
* The Length Present subfield of a WUR frame with a value that is not supported by the WUR non-AP STA
* The Protected subfield of a WUR frame with a value that is not supported by the WUR non-AP STA
* The ID subfield of a WUR frame with a value that is not maintained by the WUR non-AP STA (see 30.4.1 General) *(2042, 2170, 2687, 2740, 2815)*
* A STA Info field of a VL WUR Wake-up frame where the WUR ID field of the STA Info field is greater than the WUR ID assigned to the WUR non-AP STA and none of the WUR ID field in the previous STA Info fields contains the WUR ID assigned to the WUR non-AP STA (see 30.8.2 WUR AP Operation)
* The last STA Info field of a VL WUR Wake-up frame where the WUR ID field of the STA Info field is less than the WUR ID assigned to the WUR non-AP STA (see 30.8.2 WUR AP Operation) *(2400, 2463, 2512)*

NOTE1—The issuance of the PHY-CCARESET.request causes the PHY of a WUR non-AP STA to terminate the reception of a WUR frame that is not intended for the WUR non-AP STA. *(2041)* (#103, #623, #855, #1065)

NOTE2—A WUR non-AP STA that encounters a field or a subfield that is reserved ignores that field as described in 9.2.2 (Conventions). *(2042)*